

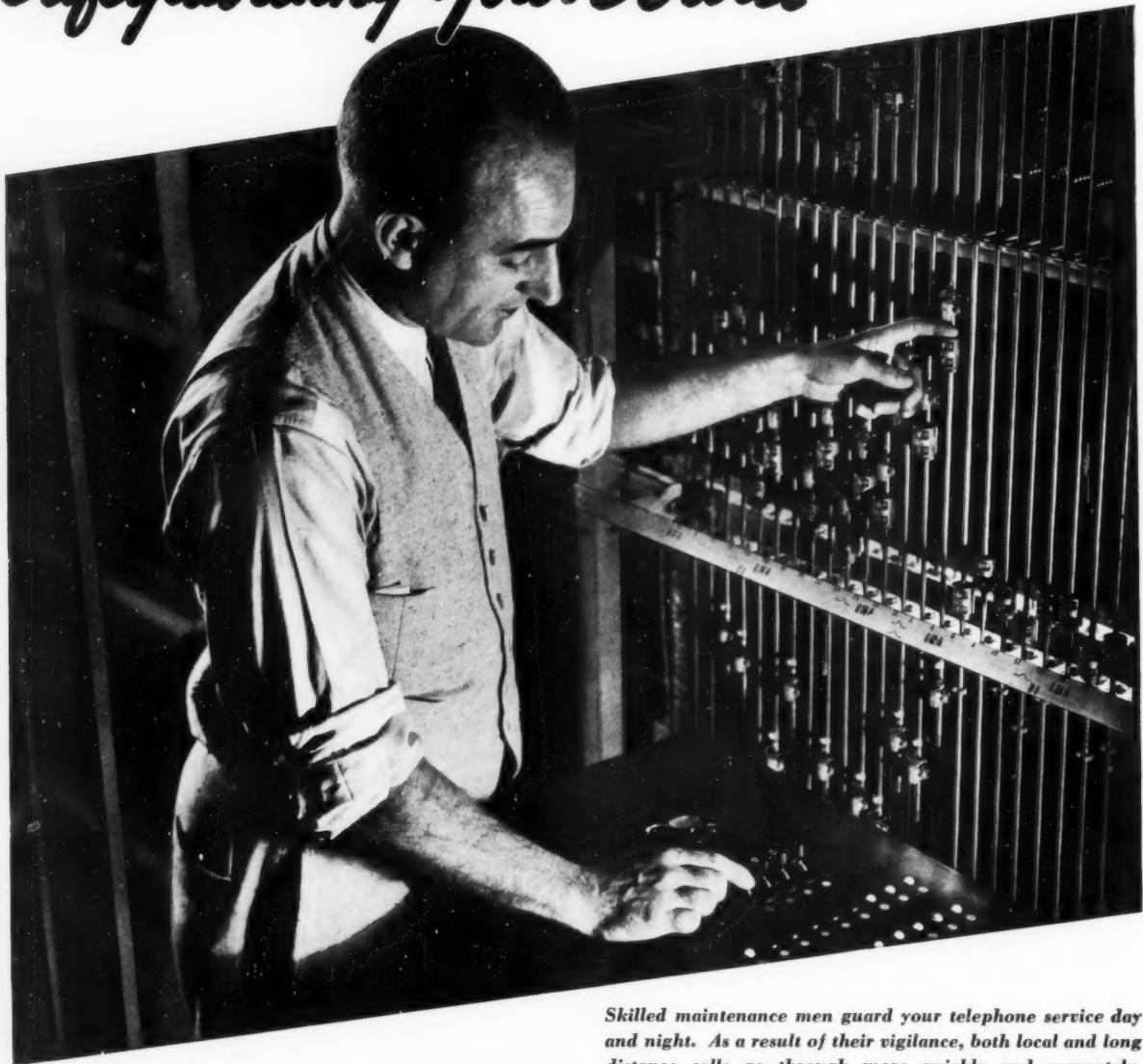
American FORESTS



JANUARY 1936

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AMERICAN FORESTS

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VOLUME 42

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NUMBER 1

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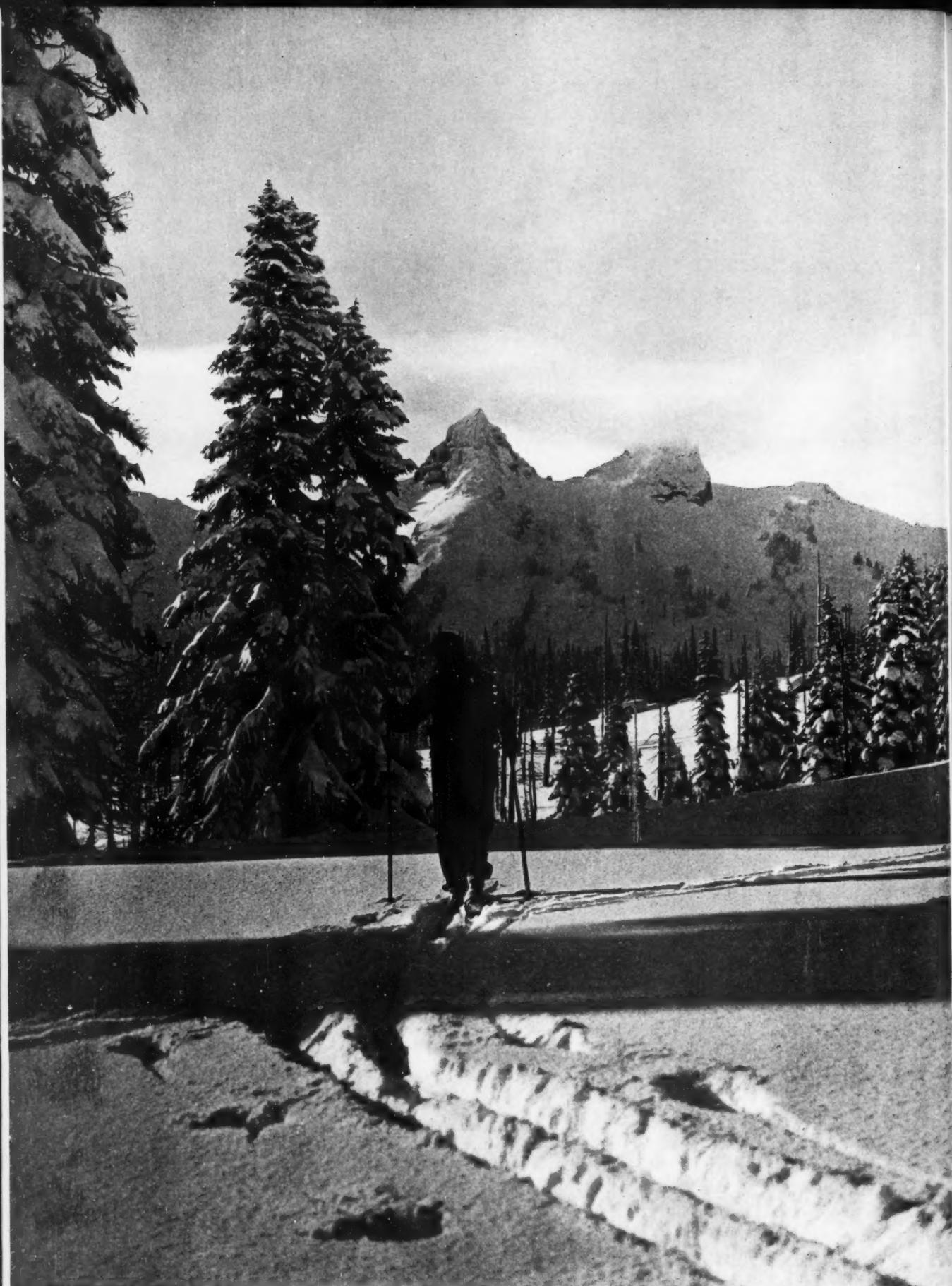
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• Member A. B. C.

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"Snow Sentinels"

Photograph of Alpine Firs, by C. Frank Brockman, taken in Mount Rainier National Park, looking toward Pinnacle Peak and The Castle of Tatoosh Range.

AMERICAN FORESTS

Vol. 42

JANUARY, 1936

No. 1

TRUCK TRAILS IN THE ADIRONDACKS?

By LITHGOW OSBORNE

Conservation Commissioner of New York

NEW YORK STATE has constructed and planned for construction thirty-six truck trails, aggregating 120 miles, of which twenty-seven, totalling ninety-seven miles, are located partly or entirely in the Adirondack Forest Preserve. Since some objection has been raised to the policy of building these roads, I welcome this opportunity to explain the truck trail program of the New York State Conservation Department. I am convinced that anyone who thoroughly understands it will approve it.

Before discussing in detail the arguments for and against these trails, let me give a little background.

Two years and a half ago when the Civilian Conservation Corps camps were inaugurated, we gave a great deal of thought to finding suitable projects to carry out. Naturally we were anxious that New York should have as many of these camps as we could properly put to work, but in planning for them we proceeded with the greatest caution and with due regard for the legal and constitutional restrictions applying to the Forest Preserve.

As to the purpose of this particular kind of work: These so-called fire truck trails are in reality simple one-way woods-roads perfected only to the point where they permit the passage of fire-fighting apparatus and personnel. We have planned them and in some cases built them, to reach various areas which are today totally inaccessible except on foot, where a fire could burn unchecked for hours, before anyone could reach it. In other words, they are designed solely, as protective measures.

Against their construction a number of arguments have been advanced. There are two main ones—their legality and their desirability.

The argument that they are illegal rests on the contention that they are prohibited by the terms of Article VII, Section 7, of the State Constitution. In reply, let me say that we live daily with Article VII, Section 7, and we know it pretty well and realize that it is something not to be taken lightly. As I have repeatedly stated publicly, it is the foundation stone so far as the forest preserve policy of the department is concerned.

However, it is not our job to interpret in detail this provision of the constitution. That is up to the lawyers, particularly, of course, the highest law officer of the State, the Attorney-General, and the courts.

As a matter of history, no measure which the department, in the exercise of its judgment, has considered as a protection of the forests from fire has ever been held by either the courts or the Attorney-General to be unconstitutional. Even the Court of Appeals, the highest judicial authority in the State, held in the famous Bob Run Case that under the constitution "all things necessary were permitted, such as measures to prevent forest fires, the repairs to roads and proper inspection, or the erection and maintenance of

proper facilities for the use by the public, which did not call for the removal of the timber to any material degree."

However, in this particular instance we have not depended on precedent. We have asked for and received from the Attorney-General an opinion which states specifically that these proposed trails *are* legal, *are* constitutional. This must certainly suffice for us. Those who dissent from the Attorney-General's view, I must refer to him. Or if they wish to determine the matter absolutely I would suggest that they seek a test in the courts. With some friendly legal advice this should not be a difficult or expensive process. I would be very glad to see it done, if only be-

cause it would determine finally the legal question involved. I have no doubt whatsoever of the outcome.

The other argument concerns the desirability of the trails and their effectiveness as a means of combatting fires. And this of course is a more difficult argument to deal with in that a question of judgment, not of law, is at stake.

I believe that reasonable opponents of the trails would withdraw their objections if they could be convinced of two things—first, that the trails will assist importantly, even though only potentially, in the department's fight against the forest fire menace, and second, that they will be closed to public vehicular traffic.

As fundamental to this whole question let me put forward one or two general considerations.

If the present discussion were being carried on in the atmosphere of the autumn of 1908, there would be little, if any opposition to the truck trails or to any other projected fire-protection measure. I was at school in the Adirondacks that autumn. Day after day the sky was heavy with smoke, so heavy that it was difficult to see across a small lake near the school. There were fires near us; there were fires on the far horizon; there were fires twenty and a hundred miles away. Thousands upon thousands of acres of valuable timber belonging to the people of the State were burned that fall.

If the Conservation Commissioner of 1908, speaking in the pall which overhung the Adirondacks that year, had suggested that he had funds and men available to build

is inclined to believe that the situation is in good shape and that nothing more is necessary. The situation undoubtedly is far better than it was twenty, or even ten years ago. But the danger of terribly devastating fires is by no means ended—as 1934 proved. Given conditions only slightly worse and there will again be a pall of smoke over the North Country and twenty, thirty, forty thousands of acres of State timber will go up in flames. Can any opponents of the truck trails give me a guarantee that we will not have an even drier season in 1936, or 1937, than we had in 1934?

Outsiders can afford not to think *much* about this potential danger. It is not their job to cope with it. It is our job and we must think about it constantly.



All of the truck trails built in the Adirondack Forest Preserve follow the line of old logging or tote roads, like the one pictured above. Commissioner Osborne claims that these trails are essential to proper forest fire protection, and that they do not spoil the wild character of the Preserve.

fire truck trails which would permit fire-fighters to be on the scene of a fire, in force, in several hours instead of many hours, his suggestion would have been hailed with enthusiastic acclaim from one end of the State to the other, and certainly by all good conservationists.

The year 1908 is not the only bad fire year we have had. There have been others since. In 1934, for all the improvement of our equipment and increase in our personnel, we only missed by the narrowest of margins an even worse fire year. As it was, we had the worst single fire we have had since 1913; and if we had not had hundreds of C.C.C. boys to call upon and also a system of roads on the Bay Pond tract, that fire might easily have been the worst on record.

The public forgets easily. For it, forest fires are largely headlines in the paper unless they are close at hand. Just because in recent years we have been able to control fires better and to reduce the annual acreage burned, the public

Over and above the legal argument the opponents of the truck trails have declared: That the trails infringe the spirit of Article VII, Section 7, if not its letter; that they will result in more fires because they cannot be closed to public vehicular traffic and hence will result in greater use of the Preserve; that the construction of the trails will be an "opening wedge" for real roads; that increased efficiency in personnel and equipment render truck trails unnecessary for fire prevention.

In reply to these arguments I would submit the following: The Conservation Department has a responsibility to keep the Forest Preserve as "wild forest land"; but part of this responsibility, and fundamental to it, is the responsibility to protect the Preserve from fire. Burned land is not "wild forest land."

The question of whether truck trails are an effective fire control measure is a technical one. In determining it, I have relied largely upon the judgment of W. G. Howard,

A. S. Hopkins and Kinne Williams, of the State Division of Lands and Forests. Their judgment may be wrong; but there is certainly more chance of it being right than the judgment of the layman, no matter how interested, who has not given years of intensive study to the subject or who has not had years of practical fire-fighting experience.

All the truck trails built or planned follow the line of old logging or tote roads. It is true that when first constructed they look "raw." Give the leaves and the weeds and the underbrush three years to work on them and they will appear substantially as we found them.

The question of whether vehicular traffic can be excluded (as the Attorney-General says that it must) is a question of experience. To date we have had relatively little trouble, and we have been through one complete fishing season and most of one hunting season. I only wish other of our regulations were as simple and easy to enforce.

Many of the truck trail routes have been open in the past to the adventurous motorist who did not care what happened to his car or to horse-drawn wagons or "jumpers." Usage of this kind is now barred, and to that extent our program has already resulted in decreased use of the woods for those unwilling to hike.

None of the trails leads through virgin timber; all are across cut-over areas. No trees of value have been cut.

The trails are dead-end roads, running nowhere, from a communication point of view, and hence would fit into no conceivable state or county highway system. The ninety-seven miles of trails proposed in the Adirondacks are scattered over an area larger in extent than the States of Connecticut and Rhode Island combined. On a map they are needles in the North Woods haystack. But for us they tap areas otherwise nearly inaccessible for fire-fighting equipment and personnel.

Conditions have changed in the Adirondacks in the last twenty years. Formerly lumber-camp crews could be called upon to fight fires, and logging and tote roads were available for access to remote sections of the woods. The lumber camps are gone and many of the logging roads are overgrown and impassable, even for wagons and jumpers.

Summarizing all these considerations, I would state the department's attitude as follows: The roads are legal on the best authority; they are effective means of fire control, also on the best authority; they will not seriously affect, over the years,

the wilderness character of the Preserve; they must and can be kept closed to public vehicular traffic; and they cannot be turned into public highways without an inconceivable constitutional amendment.

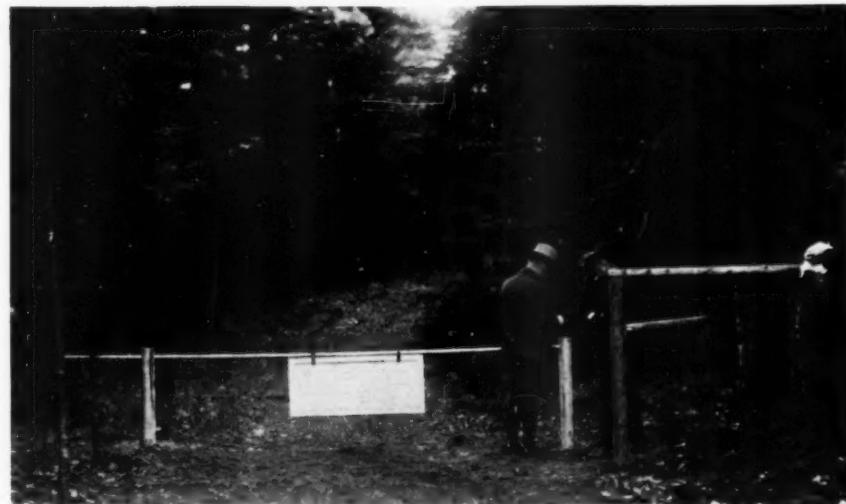
Given this set of considerations, the New York Conservation Department has no choice. We have not only the right to build the trails, but we would incur serious responsibility if we failed to build them.

In closing I would like to quote briefly from a letter written to me by William B. Greeley, Chairman of the Conservation Committee of the Camp Fire Club of America, six members of which made a four-day inspection of projects in the Forest Preserve. Mr. Greeley wrote as follows:

"All (members of the party) were warm in their praises



This truck trail, two years old, is one of the twenty-seven, totalling ninety-seven miles, constructed and planned for the Adirondack Forest Preserve as part of the State Conservation Department's fire protective system. The question of their legality, as well as their desirability, is being hotly contested.



Many of the old tote roads were open in the past, Commissioner Osborne contends, to adventurous motorists who did not care what happened to their cars or horse-drawn wagons. Such use of truck trails is now prohibited by law as well as by barrier, as indicated above.

of the care which had been taken in avoiding spoliation of the wilderness character by the work of the men, and at the same time in guarding the forests against destruction by fire through the wise provision of truck trails. Observation of places about which complaint had been made to us showed that there was little or no foundation for the complaints in the past and that there

is now no reasonable ground for criticism."

This letter was approved by the Conservation Committee of the Camp Fire Club on October 7, 1935.

Aside from the cold logic of the situation, I am quite ready to rest the department's case on the judgment of such outstanding conservationists and advocates of Article VII, Section 7.

COMMENTS ON COMMISSION'S TRUCK TRAIL POLICY

By ROBERT MARSHALL

IN MY disagreement with practically all of Commissioner Osborne's defense of Adirondack truck trails, I want to make it clear that I genuinely respect the sincerity of Mr. Osborne's argument. The issue is not that of one personality against another. It involves the fundamental soundness or unsoundness of the whole wilderness viewpoint.

Mr. Osborne quotes a portion of Judge Crane's decision in the famous Bob Sled Run case to justify his interpretation of the Constitution. He omits another equally significant portion: "Trees could not be cut or the timber destroyed, even for the building of a road."

Mr. Osborne says: "In 1934, for all the improvement of our equipment and for all the increase in our personnel, we only missed by the narrowest of margins an even worse fire year [than in 1908]." This "narrowest margin" would seem to be pretty broad. In 1908 there were 346,953 acres burnt in the Adirondacks; in 1934, 10,853 acres, or approximately one thirty-second of the area burnt in that earlier fire year. Similarly, the estimated fire loss in 1908 amounted to \$802,139, and in 1934, to \$26,199. This was in spite of the extraordinarily severe climatic conditions to which Mr. Osborne properly pointed in his annual report. Clearly, the fire organization which the State has developed is immensely more capable to cope with fires than it was in 1908, and the danger from fires because of this splendid organization is immensely less. The general public is right in believing that no radical departure from past policies needs to be taken to safeguard the Adirondacks from fire. It is right in holding that the necessity of truck trails for the purpose of decreasing the one-tenth of one per cent of the Adirondacks burned on the average annually is too uncertain to justify giving the Conservation Department a blanket discretion to invade the wilderness with routes for mechanized transportation.

Mr. Osborne feels that the Bay Pond fire "might easily have been the worst on record if it had not been for the good system of roads in that section." He also states that when the truck trails he contemplates are completed they will only be "needles in the North Woods haystack." My interpretation of the significance of the Bay Pond fire is that, in spite of the fact that there were better road facilities in that section than Mr. Osborne hopes to provide for the North Woods generally, this fire developed into the worst one in the Adirondacks "since 1913." Many other fires which started in far less accessible areas under equally dry climatic conditions were readily controlled in 1934. The Bay Pond fire seems to indicate clearly that there is no close correlation between the degree of road or truck trail

development and the effectiveness of fire control in the Adirondacks.

Mr. Osborne states that "these so-called fire truck trails are in reality simple one-way woods-roads . . ." Because the building of truck trails in the Adirondacks has fortunately not yet progressed very far, Mr. Osborne is probably unaware that from a purely technical standpoint "simple one-way woods-roads" have not proven a success for fire transportation where they have been built by the Forest Service and the Indian Service in timber types similar to those which are found in the Adirondacks. In the mixed hardwood forests there are two bad fire seasons—one in the spring before the green leaves come out, and one in the autumn after the leaves have fallen. At a time when there is already high inflammability on the more exposed cut-over areas and old burns, the narrow truck trails, where they lead through less exposed places, still have unmelted piles of snow and impassable mud holes because there has not been time for sunlight to dry out the ground. It has therefore generally been necessary for both the Forest Service and the Indian Service to widen the clearing for their truck trails to a minimum of 24 feet in order to facilitate the melting of snow and drying of the ground which makes possible the use of these truck trails in reaching spring fires. I can see no reason why Mr. Osborne in the Adirondacks will have any different experience than have the Indian Service and the Forest Service in similar timber types in the Lake States.

Mr. Osborne assumes that truck trails are certain to decrease the area burned. Truck trails, however, do not only work to decrease fire danger. In some cases they increase it. Passable trails have the genuine advantage that they do get fire fighters and equipment more quickly and easily to the fires. Especially they hasten the speed of getting to lightning fires which have the habit of starting away from the normal routes of transportation. However, in the Adirondacks lightning fires are of almost no significance. There were only seventy-eight acres burned over by lightning fires, even in the exceedingly dry year of 1934. On the other hand, truck trails tend to bring more fires into the woods if they are not kept closed to vehicular traffic. Even if they are kept closed, they greatly increase the forest inflammability along the right-of-way. Through the opening made in the forest when usable truck trails are built, the sunlight is given a better chance to dry the natural fuels of the forest. There is plenty of excellent research by forest experiment stations which clearly shows that the more sunlight which reaches the floor of the forest, the drier the dead leaves, needles, (*Continuing on page 43*)

AUTOBIOGRAPHY OF A RING-NECKED PHEASANT

As Revealed by an Investigation
of Wildlife Conditions

By WILLIAM H. LONG

THIS story of my life would have been very different if the farmer, in whose hayfield my mother had built her nest, had attached a flushing bar to his mowing machine. This would have saved not only her life and the lives of my brothers and sisters, but also the lives of other ground-nesting birds.

At the time of the catastrophe I was but one of nine unhatched, unmarked, olive-buff eggs, snug and warm in a nest of grass. At the tip of my upper bill I had a sharp tool, called my egg-tooth. With this instrument I was beginning to wear away the eggshell wall that had been completely surrounding me for twenty days. I was too young then to understand what had happened, but later, when the farmer related the incident to his wife, I learned all about the accident that ended so tragically for me.



P. F. English

"Nine unhatched, unmarked olive-buff eggs, snug and warm in a nest of grass."



William H. Long
"The blades had cut off my mother's legs and one of the horses stepped on the nest."

7



P. F. English

"I hatched on the twenty-third day, and chirped to greet my foster-mother."



P. F. English

"In preparing this story," writes the author, who is engaged in wildlife research at the University of Michigan, "I have taken the role of a pheasant and have attempted to interpret its life under environmental conditions as found today."

Above—a mowing machine equipped with flushing-bar.

My mother, a beautiful ring-necked pheasant, had built her nest on the outer edge of the farmer's hayfield, secure, she thought, from all harm. But during the season when the field of ripe hay was being mowed with a horse-drawn machine, my mother fluttered from the nest too late to escape the keen, sharp knives of its sickle. The farmer discovered that the blades had cut off my mother's legs and that one of the horses had stepped on part of the nest, crushing all but three of the unhatched eggs. I was one of the three, but my shell was somewhat cracked.

The farmer carried my mother and her remaining three eggs to the farmhouse, but she died soon after. We were then taken into a building and placed under the warm, fluffy feathers of Silky,—a wiry, Cochin bantam, who made no complaint when the three of us joined five other eggs

already in the nest. In three days I hatched and greeted my foster-mother with my first chirp. Later on that same day, my pheasant sisters also chipped through their shells; and on the following day three of Silky's own eggs hatched into white, fluffy chicks.

At first I was wet and cold, but by snuggling beneath the soft, warm feathers of Silky's breast, the sheath which enclosed my natal down soon dried and split away. I was now covered with a heavy down that protected my body. In this respect I differed from many other birds which hatch naked, helpless, and blind. I was also ready to feed myself and to leave the nest, while other and more timid birds had to be fed by their parents for a long time.

The following day we were moved into the orchard and were placed in a small wooden coop surrounded by wire. Silky was confined inside the pen at first, but in a few days was permitted to take us where she desired. She was a good mother, watching over us at all times. She gave us lessons in discipline and, because of our inherent ability to feed ourselves, taught us what to eat and where to find it. If, when touring the farmer's garden, she observed a soaring speck in the sky, she would move cautiously to taller cover and, by a low clucking, warn us of danger. On such occasions we would crouch close to the ground until she told us the danger was past.

Silky had more trouble watching over me than she did with the rest of her brood. Maybe this was because I was bigger and stronger than the others. Besides, I was the first to learn that my wing-quills were stout enough to allow me to fly a short distance. These chick flights always distressed Silky, and when I landed in a clump of tall



P. F. English

"I was ready to eat and leave the nest when I was one day old."

grass several feet away it was her anxious call that always guided me back to her.

The first real tragedy in my life occurred when I was three weeks old. It was at night, long after the farmer had closed the door of our pen. A scraping noise outside awakened me and I pushed my head from its nesting place under Silky's wing and looked up at a hole in the roof through which moonlight poured. Suddenly I could no longer see the light of the moon; the hole was black, and it seemed to be moving downward. Terror took hold of me, but not enough to prevent me from crawling out from under the protecting wing to a dark corner of the pen. Here I huddled and waited, for what I did not know. It was probably this move that saved my life.

From my corner I watched the hole in the roof. The light of the moon again seeped through, gradually increasing, as a long, snake-like body drew itself through the opening. A dull thud on the ground caused me to crouch closer in my corner. I was so terrified that my warning cry died in my throat before I could utter it. Very soon I heard a gruesome, gurgling sound which I had never heard before, and my foster mother shattered the stillness of the night with a terrifying screech. It was the last she ever made. Almost immediately I heard the startled voices of the chicks, then silence. The hole in the roof once more was filled by that strange, snake-like form as it slowly and sluggishly pulled itself out into the clear night air.

Silky's cry had awakened the farmer. He opened the door of the pen and flashed a light inside. It blinded me for a moment, and then I could see my foster-mother, lying still and motionless. Scattered about her were the quiet forms of her own two chicks and that of one of my sisters.

The farmer was angry, and spoke in a loud voice using words I had never heard before. His anger was directed at what he called a "weasel," and as he carefully pulled aside the feathers on Silky's neck I was able to see a small, ragged hole, which was red and bleeding. The farmer said that the weasel had sucked the blood from Silky's body through this hole in her neck.

Faced with the problem of caring for ourselves, we did not stray very far from the pen the following day. The farmer, meanwhile, worked around us, although at the time I did not know what he was doing there. That night we were put back in the coop and huddled together, missing the warmth of Silky's body.

After many hours, I heard the same weird noise outside the pen that I had heard the night before. Again I crept on terror-weakened legs to my dark corner and expectantly watched the hole in the roof. This time, however, no snake-like form came through the opening. Instead, I heard a sharp click outside the pen, followed by a fierce snarling, tugging, and scratching.



William H. Long

"I grew into a beautiful cock pheasant, but in contrast the modest beauty of my demurely plumaged and coy sister surpassed my own."



P. F. English

"My sister was smaller than I, but she was very, very beautiful."

At daybreak the farmer came to the pen, laughing loudly and harshly as he opened the door and let us out into the sunlight. In the steel jaws of a trap, which the farmer had buried in the ground by the side of our pen, was a small animal with short legs and a long neck. Its back was brown, its under body white. The little, beady eyes glared at the farmer in anger as he approached with a short stick of wood in his hand. He hit the animal a hard blow upon the head, and the murderer had paid for its midnight crime. Thus ended the first tragedy in my life since the passing of my real mother in the hayfield.

A few weeks later, my sister, Silky's chick, and myself were hunting bugs and weed seeds in the marsh. After a time I noticed on the far side of the marsh a white animal, which I knew to be a cat. Silky had taught me to beware of cats. The farmer had a black cat named Tom, but he was the household pet and never attempted to harm us. The farmer had thrashed him once for killing the little wrens and bluebirds that nested near the house, and had also hung a small bell around his neck to warn birds of his stealthy approach in case he should forget his thrashing.

Today, however, I was looking at a differently colored cat, without a bell. It was one of the wild and marauding kind that had wandered from its home, living as other wild animals do in the woods and thickets. I knew that such cats sometimes preyed upon quail and robins, the chipmunks and rabbits. I warned the other chicks who were feeding nearby.

Evidently they soon forgot the warning, for suddenly a white streak flashed through the air, straight for the little white chick. One awful moment and but two of us remained.

The sudden death of the little chick frightened us so much that we flew back to the house. As we were gliding to earth, the farmer came to the door, observed our unusual behavior, and noted also the absence of Silky's chick. He immediately went into the house and came out with what he called his "12-gauge." Knowing our favorite haunts, he walked across the field toward the marsh, and presently approached the place from which we had started our flight. There he picked up a handful of white feathers, mumbled something, and began to circle the spot very cautiously. He had not taken

many steps before he suddenly raised the "12-gauge" and fired. Thus I became acquainted with straying cats and with shotguns.

The days and weeks passed slowly as autumn changed to early winter. The nights were longer, the days shorter. This seasonal change reduced the time in which we could hunt for food. At night we would roost in a clump of dense elderberry bushes which grew close to the house. Sometimes when it rained we flew into the farmer's toolhouse and perched on one of the hemlock beams, where we occasionally kept company with an odd-looking, brown bird. Its small black eyes were set in a heart-shaped, feathered disc of brown from which protruded a strongly hooked bill. The bird's legs were long and feathered, and terminated in toes with sharply pointed claws. The farmer called this bird his "monkey-faced owl," and said he was worth his weight in gold because he killed the rats and mice that lived in the barn.

The owl never attempted to molest us, but would fly silently to a perch to watch for rats or mice scampering across the floor. Once in the early evening I watched him silently drop from his perch, wings spread, legs extended, and fall upon a red squirrel, clasping it in his strong, sharp claws. I had observed this little animal to be both good and bad. Sometimes I listened as he scolded, barked and chattered, or sang a rolling song. Occasionally I watched him jumping from limb to limb in the treetops, or secretly storing his winter's food supply in some secluded spot. Sometimes when hungry he searched for the nests of birds and ate their eggs and young. I did not regret his death.

By this time I had completed my post-juvenile molt and had grown into a rather beautiful cock pheasant, with a helmet of bronze glossed with deep green and blue. My wings, strong and wide of spread, were pearl gray beneath, and covered my sides and flanks of dull gold, spotted purplish black. Rising from the sides of my head, shielding my ears but not affecting their keenness of hearing, were dark green ear-tufts, feathery and prominent. My eyes,



William H. Long, courtesy of James Wood

"The desire for vengeance was stronger than my fear, and in one terrific spring and a whir of wings, I landed with my whole weight squarely on the head of the killer."

keen of vision, sensitive and alert, sparkled from their circled setting of crimson velvet. Around my neck was a snow white ring which melted into my breast of copper-red and green, each feather margined and notched a purple-black. The feathers of my tail, eighteen in number, the middle ones the longest, were poised rigid and unbroken; each seemed differently hued, but all were barred, chestnut or black, with a fringe of purplish brown. I walked about with a proud and haughty stride, well knowing that the metallic glitter of my feathers changed like rainbows in the light. My spurs were like steel spikes, short but sharply pointed; my bone-colored bill and claws were stout, slightly curved, polished, with needle sharpness. These were my natural weapons of defense.

In contrast to the gaudy and proud magnificence of my own form and plumage, the modest beauty of my demurely plumaged and coy sister surpassed my own. Her body was rounded, plump and soft, and she carried her head erect. Instead of a crimson circlet about her eyes, she had short, white feathers beneath, and had no feathery ear-tufts. Her tail feathers numbered as many as my own, but were somewhat shorter and irregularly barred olive, chestnut and black. Her dull-hued feathers of neck, mantle, breast and flanks were many shades of ash, yellowish-brown, rust, chestnut and black. Some of the feathers were plain, while others were margined, notched, wedged, or tipped. They were more appealing, even though they lacked the brilliant metallic coloring that I possessed.

In open fields she was the same pattern as the grass, weeds, twigs, stumps, moss, or brush heaps and dead leaves. Hers was a protective coloring, while mine was conspicuous. She relied upon this coloring as a protection, and by remaining motionless or by skulking away in the presence of danger, she was hard to find. Knowing that my movements would reveal my presence, I had to rely upon my wariness, my wings, and my fighting weapons. Nevertheless, she was my companion in thicket and field. We hunted our food together and roosted together. Where I led she followed, unaware that I was her self-appointed protector.

Everyone about the farm was my friend, but the only one I really accepted was the farmer himself. I would allow him to stroke my shining back and offer me kernels of grain. I followed him in the morning when he went to the barn to feed the cows and horses because he threw a heaping handful of grain to me from his well-filled bin. Some-

times, just to show my appreciation, I would give a lusty crow, which the neighbors said could be heard a long distance away.

My one enemy was the barnyard rooster, the domestic challenger to my throne. Many times when I was a chick he had frightened me, and as I grew older a mutual dislike developed between us. It became apparent that sooner or later our grievances must be settled in battle. This came much sooner than I had anticipated.

As the farmer told a friend: "It began this way. The pheasant was strutting with an insolent stride among the rooster's hens. The rooster, perching on the dog house, suddenly flew down upon the hen pheasant and began to rough her. What followed happened quicker than I can tell it. Fully thirty feet away, the cock pheasant left the ground in a whirlwind drive which knocked the rooster off his feet. From then on it was flying dust, leaves, and feathers. It was all over before I could separate them. The pheasant flew to the top of the dog house, spread his wings, ruffled his feathers and, standing on the points of his toes, crowed his harsh, challenging call. On the ground the rooster was lying very still. Most of the feathers were gone from his head, and his once notched and rigid comb was hanging limp, broken and bleeding. Presently he was able to get to his feet and, with downcast head, staggered slowly and sadly through the hen house door."

One afternoon in December, my sister and I were walking lazily through the oak woods. The sun was shining, its rays filtering through the branches of the trees, warming the ground upon which they fell. Occasionally we would stop at some bare spot on the woodland floor to hollow out a dusting bath in the fresh, cool

earth, where we cleansed ourselves by wallowing about, spreading our wings, relaxing our muscles, and enjoying the silence of our surroundings in the peaceful woods.

Suddenly, through the shaded woods, came the shrill cries of frightened birds. A white-breasted nuthatch, a tree sparrow and a rabbit hurried by, seeking the protection of dense underbrush. At the first alarm I froze, head up, rigid, and not even blinking an eye or moving a feather. A shadow, reflected by the sun, passed and circled over the ground. Without moving my position, I glanced upward and noted my ancestral enemy—a large, slate-gray, round-tailed hawk. I could see its short, hooked beak gleaming (Continuing on page 32)



Michigan Department of Conservation

"As far as I could see, everything was covered with snow, like white, frosted sugar. In the woods, the limbs of leafless trees were naked and bare but the conifers were heavily bowed with snow."

SUMMER'S HAUNTS IN WINTER



By DONALD HOUGH

VACATIONS are taken in summer, but the vacation lands are there all the year round. It is in summer that folks go to the north woods of Maine, Michigan, Minnesota or Wisconsin, where there are great coniferous forests, where the terrain is rocky, where waterways are so extensive that often the only travel is by means of canoe. In the winter, these magnificent vacation retreats lie deserted by all visitors, except perhaps the trappers, game wardens, forest rangers, and others who live and work there.

It is my purpose to suggest that the sport of camping out in winter offers every bit as fine an opportunity for recreation as does traveling by canoe in summer. I shall confine myself to this one aspect of vacationing in the winter outdoors, since those winter activities which center in tobogganing and skating neither come within the scope of my knowledge nor require, it seems to me, any championship of their charms.

When I dare suggest that winter offers a splendid opportunity for camping in the north woods, and when I go further and say that I prefer the winter woods to the woods in summer, I run the risk of being catalogued as a crank, one of those hardy, tough, cold-shower-fresh-air advocates who flaunt a certain boisterous and entirely obnoxious health in the teeth of ordinary mortals. This is not true. I have given up my old sport of swimming because I shrink from the plunge; I surreptitiously refrain from turning on the cold water when I take a shower; and I enjoy an office temperature of around eighty degrees all winter. In suggesting winter camping, then, I do so from the point of view of a thoroughly house-broken person.

In any discussion of winter versus summer camping the subject of temperature is the first to raise its head. This should be disposed of immediately, for surprising as it may seem, the difference in comfort is not sufficient to be of prime importance. But winter in the city should not be confused with winter in the north woods. In the city you dash from superheated buildings into intense cold; you wear insufficient clothing for the outdoors, and entirely the wrong kind. This, of course, is unavoidable. Since it is neither practical nor advisable to dress primarily for the cold, you dress in a manner to afford the greatest comfort

indoors, then depend upon a single heavy garment to shelter you during the short hops between radiators.

In the winter woods you do not dress as heavily as you do to go to the theater—that is, in terms of pounds of clothing. But you dress warmer. You wear wool underwear and socks, a fur cap that comes down over your ears, mittens, a wool shirt, heavy wool pants, and a leather or mackinaw jacket. On your feet are oil-tanned moccasins or leather-topped rubber pacs, depending on the condition of the snow. This clothing is sufficient for all ordinary purposes, and for traveling. When you stop, or when there is a blizzard or unusually cold weather, you slip on your "overcoat"—a light, loose parka made of an army blanket or perhaps of cotton drill and rimmed with fur at the throat and around the hood. Since this garment has no opening along the front, it breaks the wind effectively; and because it is loose, it is quite warm, surrounding you as though it were a portable tent.

Sleeping is easily disposed of. You use a light eiderdown robe which weighs about half as much as do the blankets you carry in summer, and takes up about half their space. You cannot use the robe in summer because it is too warm for comfort, consequently it is a paradox that your winter sleeping quarters are lighter and smaller than your summer quarters.

Dressed as I have outlined, most of your day will be spent in the utmost comfort of body. Your discomfort from the weather will be about equally divided between too much warmth and too much cold. You will not enjoy the cold of early morning, before the sun has risen, nor will you be entirely at ease in the warmth of mid-day. But these extremes are not any worse than corresponding summer variations. If you become too warm in the winter noon, you have only to stop for a few minutes in the shade. When you are cold, the discomfort usually is not very severe, and surely there is nothing quite so satisfying to the human senses as to draw close to a roaring fire and drink huge quantities of hot tea after a trek across a wind-swept lake in the teeth of a chilling blast. There is no corresponding relief from the heat of mid-summer.

Every person of any outdoor experience appreciates the fact that a great many vacations in the north woods



The addict of fishing may even fish in the winter wilderness. You take your catch with a drop-line through a hole in the ice, undisturbed by black flies or singing hordes of mosquitoes.

are ruined by a non-advertised but persistent insect population. This scourge begins in late May, reaches its peak in June, dwindles imperceptibly throughout July and then fades quickly into comparative innocuousness by late August. The farther north you go, the more plentiful is this form of native wildlife. The singing hordes of mosquitos and the dancing swarms of black flies are no joking matter to the camper who travels by canoe through the wilderness or the near-wilderness. The absence of these companions in winter is easily withstood.

The next point I wish to bring out in favor of winter camping is a rather surprising one—ease of access to the forest. In summer you are confined either to the waterways or to the roads. The waterways must be navigable by canoe, without too many portages to ruin the sport, and the roads must be passable by motor car. Thus you are effectively excluded from the smaller by-paths of forest travel, and these are the only avenues of approach to the inner recesses of the forests. In winter you travel the frozen surfaces of lakes, both large and small, lakes connected by waterways and lakes connected only by the trails used by trappers; you follow the ice aisles of the forest that are created by small streams, much too shallow,

too steep, or too swampy for summer navigation; and you follow trails—or make them—through the forest itself.

In winter you pitch your tent on the level, snow covered ice in a sheltered bay. There is no clearing away of brush, none of the arduous labor of pitching a tent on uneven terrain. There is no searching for favorable spots, no camping where others have camped before you to the accompaniment of rusty tin cans, discarded odds and ends of food. Your fire, instead of being a nuisance is a blessing, and carries with it no danger of destroying a forest. You build it as large as you wish and let it roar itself away until it is consumed in a little lake of its own manufacture.

The tent is pitched by means of birch or poplar poles easily found in the comparative barrenness of the winter woods. Nor are there stakes to cut, or to drive. You simply cut four notches in the ice, one for each pole. These are tied together near the top in pairs, to create forks, and the tent suspended from the ridge pole they support. Other poles are tied alongside the eaves of the tent, and the guy ropes lashed around them. It is all very simple, and is done perfectly in a few minutes. Spruce or balsam boughs for your bed are quickly cut, and form a better bed than they do in summer for the reason that they have an under mattress of snow, already prepared by nature and tramped down by snowshoes.

All very well, you may say, but the purpose of camping out is not to see how quickly a tent can be pitched, nor to keep yourself comfortable. There is recreation as a relief from the city and its routine scenery and surroundings, there are sports such as fishing and swimming, observation of wildlife and other attractions.

In summer, you escape the humid heat of the city, but in winter you give yourself a thorough renovating just at the time when, steeped in stale air, cramped indoors, denied local outdoor recreation and exercise, you

need it most. The thrill of getting outdoors late in February, when winter has become a burden and the advent of spring approaches with the pace of the snail, is hardly equalled by a change of locale and a slight change of climate in summer.

The scenery of winter does not, as a whole, equal that of summer, in my own opinion, for the reason that the foliage of the deciduous trees so effectively conceals the fire-scarred acres which, alternating with the stands of fine timber, are all too numerous in the north. But when the scenery is good in winter, it surpasses the best that summer can offer. When you are confined to the roads or to the larger waterways as you are in summer, the scenery, to be frank about it, begins on the second day to look discouragingly as it did the day before; and soon this becomes monotonous. In winter, since you are not confined so closely in your choice of routes, you cross a lake one moment, and the next you are pushing through the forest, or following the course of a small stream that twists and turns through the woods, passing through small lakes, and opening up new vistas at every turn. The variety is that of the forest itself, and on this point of almost infinite variety, hinges the charm of the usual winter landscape.

The finest spectacles of winter far surpass the high spots of the summer scenery. Those northern lakes which are surrounded by solid pine or spruce forests and which are studded with islands—each with its head-dress of conical trees—present as striking a picture as I ever have seen in nature. A panorama such as this, viewed early in the morning, when every twig is covered with a delicate tracing of frost, when the white blanket of the lake, lying golden in the sun, is pierced by the long peaked shadows of the spruce trees, is really breath-taking in its cold beauty.

ties, is a rare sight indeed. There are no birds worth mentioning in the north, but there are always a few ducks. But the wildlife that is sighted in summer is more numerous than that which is spotted by the winter traveler.

Against this preponderance of summer wildlife is one of the most fascinating phases of the winter woods—the drama that is written on the snow. From the post-hole tracks of the moose to the faint toothpick scratches of the mouse, the snow records all. Without raising my eyes from the snow I have spent an hour watching a fight be-



There is nothing quite so satisfying as to draw close to a roaring camp-fire after an exhilarating trek over snowy hills, through the forest, or across a windswept lake.

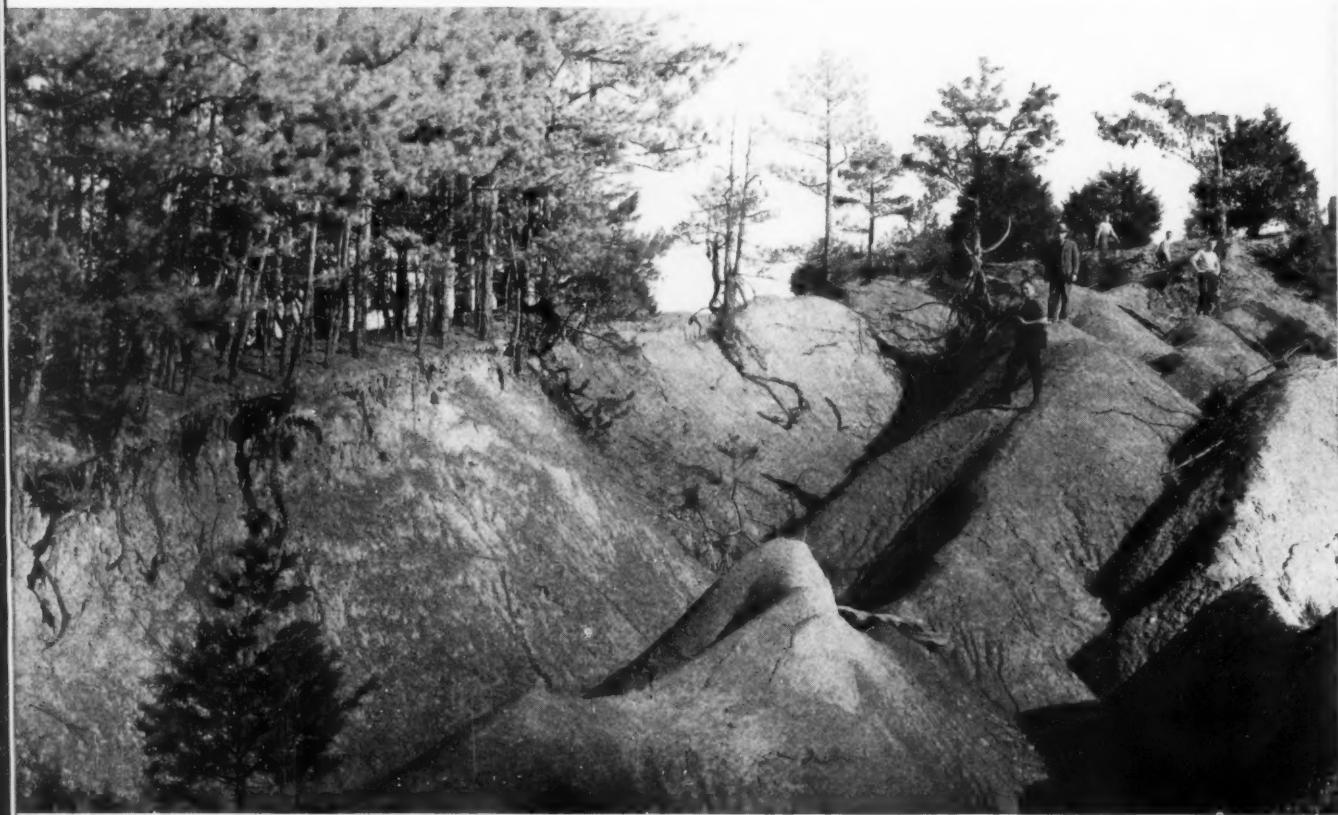
In regard to sports, there is no comparison between winter and summer. Fishing surely is one of the main diversions of summer camping, and there is no fishing worthy of the name in winter. The fish you catch are taken through a hole in the ice, with a drop-line, and this is very cold work. It is of interest only insofar as it provides fodder for the frying pan. In winter there is little sport to be had—no fishing, no swimming.

In the matter of wildlife—excluding black flies and mosquitos—the advantages are even. All woods are teeming with life that is invisible. For every deer or moose that is seen in summer, thousands roam the forests. The wolf is never seen at all, the beaver, except in restricted local

tween two bull moose; I have seen the wolf, on solitary patrol, stalk its prey. This winter snow record, for a change at least, equals in interest the spectacle of summer wildlife. And for that matter, the largest number of deer I have ever seen were spotted as they gathered on the southern slopes to nibble the moss exposed by the mounting sun of late February.

For the novice, one way to enjoy the February woods is to go to a resort on the fringe of the wilderness, or to the cabin of a guide, and take one-day trips in all directions. Perhaps enough equipment may be carried to permit one-night stands in the wild. This method requires little equipment and no knowl- (Continuing on page 46)

THE MAGIC OF GROWING TREES



THE FORESTRY DIVISION OF THE TENNESSEE VALLEY AUTHORITY IS OFFERING MANY EXAMPLES OF THE VALUE OF IN UNION COUNTY, TENNESSEE, ILLUSTRATED ON THESE PAGES. THE PANORAMA ABOVE SHOWS A RAVISHED NORRIS LAKE. ABOUT A YEAR AGO SMALL CHECK DAMS WERE BUILT BY THE CIVILIAN CONSERVATION CORPS, AND THE MIRACLE OF GROWING TREES—A REAL FOREST COVER IS BEING ESTABLISHED, LITTLE OR NO SOIL IS BEING PANORAMA BELOW SHOWS THE HILLSIDE AS IT APPEARED LATE THIS SUMMER. MANY



IN THE TENNESSEE VALLEY



Photograph by G. H. Lentz

TREES IN RECLAIMING ERODED LAND, BUT NONE IS MORE STRIKING THAN THE SHERMAN STOCKSBURY PROJECT HILLSIDE AS IT APPEARED WHEN PURCHASED BY THE TVA FOR THE PURPOSE OF PROTECTING THE MARGINS OF IN THE EARLY SPRING OF 1934 YOUNG LOCUST TREES, TAKEN FROM NEARBY WOODLANDS, WERE PLANTED. THEN WASHED AWAY, AND THE UGLY SCAR OF EROSION IS BEING HEALED, ALL IN THE SHORT SPAN OF ONE YEAR. THE OF THE YOUNG TREES HAVE REACHED A HEIGHT OF FROM TEN TO TWELVE FEET.



COAL FORESTS OF THE PAST

By RAYMOND E. JANSSEN

Photographs by Field Museum of Natural History and the Writer



A prehistoric forest of the Pennsylvanian coal-forming period of the earth's history as reconstructed in the Field Museum of Natural History, Chicago. The principal trees are known as Lepidodendrons—with diamond shaped scars on the trunks—and the Sigillarias—with vertical rows of scars. The spores of these early trees constituted an important element in the formation of coal. Although they long since became extinct, diminutive descendants still exist as club mosses or ground pines which are today used in the making of evergreen Christmas wreaths and decorations. (Photograph copyrighted and reproduced by permission of the Field Museum.)

THE importance of coal in our civilization caused speculation long ago as to its origin, with the discovery that it was composed entirely of the metamorphosed remains of plants and trees of by-gone ages.

From this discovery came the popular definition that coal is "bottled sunshine." Plants are the only natural means known by which carbon can be extracted from the air with the use of sunlight as the source of energy. When coal is burned, this heat, or stored energy of the sun, is released with the return of the carbon to the air. Hence, the definition is substantially correct. The commercial importance of coal has caused geologists and botanists to delve into the mysteries of its origin, with the result that much has been learned in recent years concerning the great forests of the past which have provided us with our coal fields of today.

Coal has been deposited in various quantities ever since land plants began to flourish upon the earth. The most important of these bituminous and anthracite coal deposits were formed during the Carboniferous period of the earth's history, or more specifically during the Pennsylvanian subdivision of this period. The Pennsylvanian period began about a quarter of a billion years ago, and lasted for thirty-five million years. During this vast period of time, great swamp forests of luxurious vegetation covered much of the earth's surface, particularly in what is now Europe, Asia, and the central and eastern parts of the United States.

In those days the land presented a very different aspect

from that of today. There were no woodlands of deciduous broad-leaved trees nor waving grassy prairies. No bright-colored flowers existed to add color to the landscape; no birds built their nests in the trees; no furry animals burrowed in the ground; and no butterflies or bees darted through the air. Flowers, birds and mammals, as we know them, did not make their appearance upon the earth until millions of years later. Instead, vast swamp-lands covered much of the earth's surface in which flourished species of trees and plants which have long since become extinct.

This vegetation, although quite abundant, consisted entirely of lower plant orders, such as our present-day horsetails, club-mosses and ferns. Although being lower forms botanically, many of them were giants in size. The land was dominated by huge horsetail rushes, great tree-like club-mosses, and primitive gymnosperms which attained the dimensions of our larger present-day trees. The undergrowth consisted principally of ferns and other plants having fern-like foliage. From all indications, this forest growth was very dense, always green, and grew rapidly and abundantly. The only animals living in these forests were small amphibians and reptiles, and numerous kinds of insects. Huge cock-roaches crawled over the plants, and gigantic dragonflies, some with wingspreads nearly thirty inches across, flew about through the air. The waters contained fish and crustaceans.

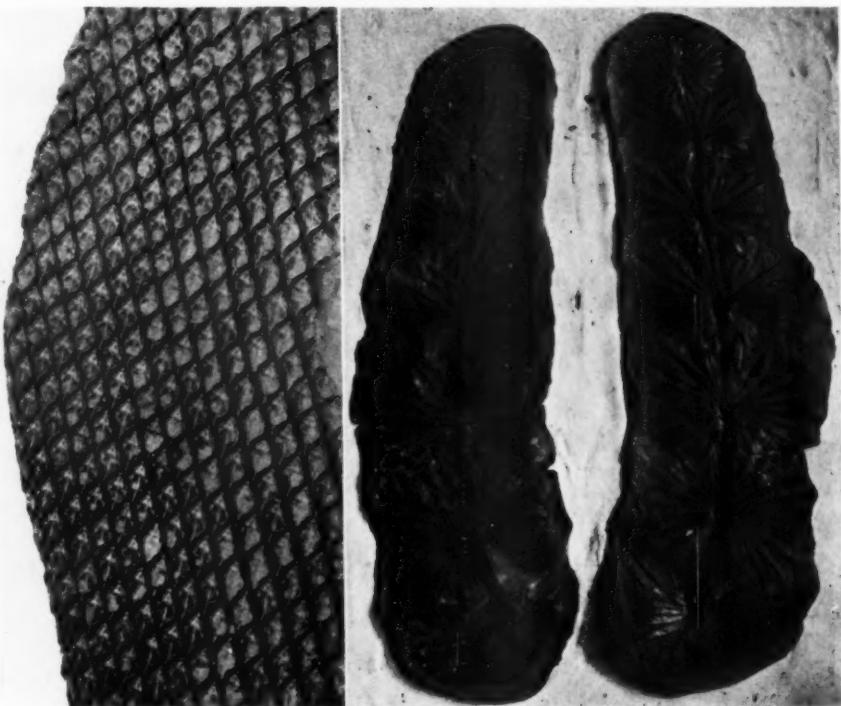
Our knowledge of the plants of the past is acquired prin-

cipally from fossils or their impressions which are found in the shales and sandstones adjacent to the coal beds. The plant remains constituting the coal itself are usually so compressed and altered that their details are not easily distinguished. However, the remains and impressions which exist as fossils in the strata immediately above or below the coal proper are frequently so well preserved that often even the former plant cells may be recognized. These underlying strata represent the former soil of the swamp in which grew the plants that later became the coal, while the strata overlying the coal represent the sediments which covered the growing plants, killing them but preserving their remains as coal and fossils. As the ages passed, these enclosing sediments turned to stone, and the original plant material remained within as a layer of coal. When struck with a hammer, such sedimentary rocks usually split along these coaly layers which form lines of natural weakness through the rock, and the impressions of the former plants are thus revealed. There is a never-ending thrill in breaking open pieces of these sedimentary stones, for one never knows but what the next stroke of the hammer may reveal the impression of a plant which has never before been seen by human eyes, and which may throw light upon another step of the long pathway that plants have ascended in their evolution from primitive unicellular structures to the magnifi-

cent trees of today. By studying these well-preserved fossils, it has become possible to reconstruct, with accuracy and detail, the characteristics of the growth which constituted the great coal forests of former ages.

The principal trees during the Pennsylvanian coal-forming period of the earth's history were the Lepidodendrons—with diamond-shaped scars on the trunks—and the Sigillarias—with vertical rows of scars. These unusual scar patterns represent the points of attachment of fallen leaves. A peculiar characteristic of these trees was the continued growth of these leaf-scars even though the leaves had long since fallen off. The leaves were long and grass-like in appearance, and were borne in clusters around the growing-tips of the branches. As the branches grew, new leaves appeared at the tips, and the lower leaves fell off.

The Lepidodendron trees branched dichotomously, that is, by twos—each branch dividing into two smaller ones. Each of the ultimate branch-tips terminated in a cone which bore the reproductive spores, and around which the leaves were situated. These cones and leaves were shed periodically, the branches continued to grow and dichotomize,



The buried forest bears witness!—Left: a fossil impression of Lepidodendron trunk, showing its diamond-shaped leaf scars (*Lepidodendron obovatum*). Right: A split shale nodule showing whorled arrangement of leaves on the stem of a *Calamites* (*Annularia stellata*).



This slab of shale is a silent witness to a vibrant past—containing the exquisite fern-like leaf fragments of a Cycadofilicales (*Neuropteris ovata*).

and new cones were produced from time to time upon the newer tips. It is believed that the cones were shed when ripe, and that fertilization occurred on the damp swampy ground.

The Sigillaria trees did not always branch, but often bore their leaves in single large clumps at the crests of their trunks, much after the fashion of our modern palm trees. Their cones were produced on small stems which emerged directly from the trunks. These trees attained a height of a hundred feet, and were sometimes as much as six feet in diameter.

Although the Lepidodendron and Sigillaria trees have long since become extinct, diminutive descendants still exist, and are known as club-mosses or ground pines. They are used in the making of the familiar evergreen Christmas wreaths and decorations. The spores of these early trees were produced in great abundance and constituted an important element in the formation of coal. In fact, certain coals, known as cannel coals, seem to consist largely of such spores.

The banks of the watercourses in these prehistoric forests were lined with dense growths of large bamboo-like reeds, called Calamites. They equalled the modern bamboo in height and diameter. The stems were jointed in appearance, some types bearing no branches and others branching profusely. The leaves were always borne in whorls, or rings, entirely around the stem, and in groups of six to twenty or more. The reproductive spores were borne in cones, or catkins, at the tips of the branches. These great tree-like reeds also are represented today by a small descendant, the Equisetum, commonly known as the horsetail or scouring-rush, common to our country roadsides.

The undergrowth of these great primitive forests consisted almost entirely of ferns and plants of similar appearance. Because of the superabundance of fern-like foliage among fossil remains, the Carboniferous period has been called the "Age of Ferns," but recent knowledge has shown this interpretation to have been somewhat incorrect. Microscopic studies of stem structures, together with the discovery of fossilized seeds attached to the stems of many of these plants has proved them to be other than true ferns. They seem to occupy a position midway between ferns and seed plants, and have therefore been given the name of *Cycadofilicales*, or Seed-ferns. In numbers, they seem to have far outranked the ferns. These plants were of many species. Some were small herbaceous forms, some were climbers, and some attained the dimensions of small trees similar to the tree-ferns of our present tropics.

Fossils of prehistoric coal-forming plants are particularly abundant in Illinois, and several localities in that State have been more thoroughly explored for plant remains than any in North America. Knowledge of these plants has now reached a remarkable degree of accuracy, and only a few of the rarer forms are not completely understood.

In studying the remains of fossil plants, we apply the knowledge derived from the study of living forms. There

is no reason to assume that the biological reactions of plants in previous ages were different from those of today. Fossil plants have given us, therefore, many indications of the climate of the times in which they lived.

The flora of the Pennsylvanian period was composed of trees and plants which more approximately compare with those of our tropical regions of today than with any other. The absence of annual growth rings in the tree stems is also indicative of more or less uniform growing conditions without seasonal changes. This is also comparable with tropical conditions. This situation is unusually interesting inasmuch as the great coal deposits of the Pennsylvanian period are situated in the northern hemisphere, and extend from

localities near the north pole, down into the temperate zone. Great coal deposits — the remains of tropical kinds of vegetation — are found in many of the Arctic islands, in Greenland, Spitzbergen, Siberia and Alaska. It would therefore seem that a uniform climate must have existed over a vast area.

Although difficult to imagine, it is quite possible that a uniformly warm climate could have existed throughout the earth during Pennsylvanian times. This would account for the finding of coal and plant fossils in Arctic regions. However, in addition to a favorable climate, plants require an abundance of sunshine for luxuriant growth. It is therefore impossible to explain how the plants which formed the coal could have received a sufficient amount of sunlight during the long polar nights to have enabled them to grow continuously without showing even an indication of annual growth rings.

In attempting to explain this riddle, a theory suggesting the possibility of continental movement has been applied. This theory suggests that during the great coal forming period a great land mass, existing in more southern latitudes where luxuriant plant life was possible, might later have broken up into portions which subsequently drifted apart and formed the continents as we know them today. Although numerous difficulties stand in the way of a thorough understanding of such a theory, nothing else so well explains the wide distribution of the plant world in the Pennsylvanian period.

Meanwhile, the study of fossil plants continues, and some day, perhaps, we shall know definitely why coal and remains of plants characteristic of the tropics are found in latitudes where the nights are several months long and the ground is covered by perpetual ice and snow.

Until one is acquainted with the nature of this black mineral, he little suspects the wide influence the great forests of earlier ages have played upon the later development of man. There can be no question as to the practical importance of the vast coal deposits of the world, for they are our largest sources of available energy for power, heat and light. By the use of coal, man has made iron his slave. By the use of iron, man rules the world. Thus the buried structures of a past geological age have become the foundations on which a greater life arises today.



SNOWFLAKES

They drift across the country side,
They cover woods and lakes;
They make a deep, soft quilt of white—
Dainty snowflakes.

They beautify yon spreading oak,
And for the brook they make—
A dainty, soft white coverlet—
Lovely snowflakes.

And every tall majestic fir,
With care it decorates,
Till sparkling branches, laden, bend
'Neath soft snowflakes.

Dorothy Jane Wentling.
(Age 12 years)



In many old Mexican church yards, century-old church bells are hung, for safety, in the small trees rather than in the towers and belfrys which are so often injured by earthquakes.

TREES OF OLD MEXICO

By G. CUNNINGHAM TERRY

NO OTHER country has a greater variety of tree-life, and general fauna and flora, than Mexico: ten thousand different trees and bushes are to be found within her domains. These range from the giant pines of her cold table-lands, which have an altitude of ten thousand feet, to the unique and varied ones of the temperate clime, and extend far southward to damp, rich tropical regions. A description of these would fill a book, for there are many trees in Mexico's three geographical zones which are unknown elsewhere on the globe.

Oldest and most noted of these are the enormous "ahuehuetes" (cypresses) of the Valley of Mexico, declared by tree authorities to have been past their prime before Columbus turned the prows of his fleet toward the undiscovered New World. A few of these hoary giants yet remain—the huge "Montezuma's Tree" at Chapultepec; one known as "Tree of the Dismal Night," under whose wide-spread branches Cortes the Conqueror "sate him down and wept," when his forces were driven out of Tenochtitlan. And last and greatest, the monster "Tree of Tule," said to be the third largest in the world. These ancient "ahuehuetes," now stunted and shrivelled, are many centuries old: they were doubtless tiny seedlings when those mysterious lost folk, the Toltecs, ruled Anahuac during the sixth and seventh centuries.

Botanically known as "*taxodium mueronatum*," Tule's gigantic cypress is one hundred and forty-one feet high, with a circumference of one hundred and eight feet five feet from the ground. Thirty persons, with outstretched arms, can barely encircle it. The trunk throws out great phlanges, with numerous gaps, and its branches have a spread of one hundred and fifty feet. This tree is grouped with the enormous Banyan of Calcutta's botanical gardens, and the "Tree of a Hundred Horses," at Aetna's base, said to

be the world's largest. Baron von Humboldt was so impressed by Tule's tree, which he declared equal to the monstrous baobab of Africa (oldest organic monument on the globe) that he carved his name on its mighty trunk, several decades ago.

Probably the most sinister tree of America is that "evil one," growing only in the semi-tropical State of Morelos, which is locally known as "*Arbol de la Mala Mujer*," (Tree of the Bad Woman). It is found mostly in barren, isolated spots, and its trunk and limbs are bare and twisted, apparently contorted and poisoned by its own venom. It is a fact, and one to which the writer bears witness, that anyone who even touches this ominous tree invariably contracts fever, skin poisoning and other ills, which are often incurable. Peculiar, as stated, to Morelos, these trees are now labelled, wherever found, with the placard "Dangerous." Natives fear and avoid them, and resident foreigners give the "*Mala Mujer*" a wide berth. No forester has ever classified this tree—fortunately, the sole one of its kind—which has some of the effects, many times multiplied, of poison ivy.

The town of Cuernavaca, also in Morelos, is noted for its "*Arbol de Dinamita*" or Dynamite Tree, the only one of its kind known throughout Mexico. Wide-spreading, though of no great height, this odd tree grows in the yard of a native home, and is also labelled "Dangerous." This for the reason that its fruit—symmetrically-ribbed, thin shelled gourds and about the size of a large orange—explodes when mature with surprising violence, and anyone within range of the flying fragments may be badly scarred—and certainly scared! When one of these "dynamite nuts" does go off, it resembles a blast of its namesake, and the flat round seeds scatter to an astonishing distance. This *arbol de dinamita* is classified as *nux vomica*, from which the deadly strychnine is extracted.

Juchitan, a small town of Oaxaca, has been celebrated for centuries as the habitat of another unusual tree—"Arbol de las Manitas" or "Tree of the Little Hand." Native name—and let the reader prepare for a shock—*Tlapaliqui-xochitl!* This tree, with a history extending back many centuries, has certain medicinal properties, and is venerated and jealously guarded by natives thereabouts. Its most interesting feature is the bloom, a quaint crimson one, shaped like a human hand, and the "Tree of the Little Hand" was, centuries ago, cause of a vicious war between Moctezuma II and the Mixtecan Lord of Oaxaca. Moctezuma, wishing to transplant these unique trees to his own royal gardens, ordered them sent to him. The Mixtecan Cazique refused, and a long drawn out battle ensued, wherein the Mixtecs were practically extinguished. Several writers state that only two of these trees exist—"one in Toluca, and the other in Mexico City." This is incorrect, for they still flourish in Juchitan.

The far-famed "Borda Gardens" of Cuernavaca (whose little villa was a favorite resort of that ill-fated Royal couple, Maximilian and Carlota) are Mexico's sole botanical gardens and here flourish many of the ten thousand species of trees and plants known to exist in the land.

Loftiest of these is the *ahuacote* (butter-nut or alligator pear) whose fruit is a delectable substitute for butter. Another splendid tree here is the Mexican Magnolia, with its fragrant purple and white blooms. There are numerous Pepper-trees (*Arbol de Peru*) which furnish a much-used gum, and a medicine prized by natives. "*Ipomea Purga*" (Jalap) thrives in "La Borda," also the castor bean, which attains a considerable height, and yields our universally detested, though beneficent, castor oil.

Here the "Chico-zapote" tree is found, by the hundred. Its small round fruit much resembles the Irish potato, but its flavor is delicious, indescribable, with a hint of pure maple sugar. The Chico-zapote is perishable, found only in Mexico, and is a favorite fruit of the people, whose ancient "dichas" or legends declare that it, and not the apple, was originally the cause of all the trouble in the fabled Garden of Eden.

"Granaditas" (Chinese pomegranates) grow tall and stately in Borda's genial, sheltered gardens, producing their beautiful blooms and brilliantly-hued, delectable fruit.

There is, also, "*Carica papaya*" or "*Melon zapote*," worthy of a fuller description, later: Guava or Spanish "*Guayaba*"; the "*Chirimoya*" or Custard-apple, exceedingly good to eat; "Mummy apple" (*Mamey*), and numbers of other unusual trees, many of them fruit-bearing. Best of all there is the Mango, tall and stately, brought from Manila in sixteen hundred, which has spread from these once-imperial gardens to tropical regions farther south. Jalapa, Cordoba and other tropical towns are famed for their delicious yellow-and-black "*Mangos de Manila*," than which none finer or larger can be found anywhere in the world.

Hundreds of trees, peculiar alone to tropical Mexico, are found on the Isthmus of Tehuantepec—that rich, lush strip of jungle which links together the continents of North and South America. Conspicuous among these is the giant wild fig tree, the gigantic branches of which spread more than a hundred feet in every direction. These bear weirdly shaped pods, which jungle Indians use as receptacles for their few coins, charms and other queer oddments. Grotesque and beautiful vines and orchids grow profusely on the



The monster tree of Tule—greatest of the Mexican cypresses and famed throughout the world. This gigantic tree is one hundred and forty-one feet in height and has a circumference of one hundred and eight feet.

towering branches of these trees, and their habitat is a wild and surpassingly beautiful hortus, rarely seen by other than native jungle-folk, and occasional orchid-hunters.

Quaintest of all Isthmian trees, however, is the "pilea conica" or "parrot-fruit tree." Leafless, it bears a queerly shaped fruit, which resembles large okra-pods, sticky, juicy, and bright green in color. These pods stand up vertically from the tree-limbs, and they so closely resemble the small vividly green jungle parrakeet as to afford an effective camouflage for the latter.

These tiny, saucy parrots, when disturbed, flash quickly to the "parrot fruit tree," where they perch, and remain motionless among the upright green pods. So nearly do birds and pods resemble each other that pursuing hawks or other birds of prey will fly past a tree in which dozens of parrakeets have taken refuge, unaware of their hiding-place.

Prominent among Tehuantepec's trees is "el Melon zapote" or Papaya — "Chico-zapote" in Morelos, and "Chicle-gum tree" farther south. On the Isthmus, it is very prolific and attains a height of some forty feet. Its glossy dark-green leaves, which are generally thirty inches long, grow in clusters at the end of a bare and leafless limb, while the fruit—about the size and shape of our own musk-melon—is sweet, juicy and yellow, with jet-black seeds. A tropical Papaya's development is so rapid that it bears fruit when only a year old, producing twenty to a hundred melons at a time. These frequently weigh as much as twenty pounds each, and buds, flowers, and green and ripe fruit often grow on the same tree, at the same time. These melons contain a large percentage of pepsin, which is exported to foreign lands for medicinal purposes. Fruit and leaves of this tree possess the valuable property of rendering tough meat juicy and tender, and foreigners call it "the cold storage plant of Mexico." Leaves and fruit, when rubbed upon stringy and tough meat, attack the fibers of the latter, softening, and making it edible. In Tehuantepec, one often witnesses the beheading of a venerable fowl, to be hung overnight in a papaya-tree. Upon being cooked, next day, this old fowl emerges from the *olla* (pot) as juicy and tender as a young broiler.



An avenue of ancient cottonwoods, near Mexico City.

While the "Papaya" is indigenous to Mexico, cannibalistic South Sea Islanders also know of this tree's "tendering" qualities, and many portions of their favorite "Long Pig" have been served, wrapped in its leaves. It is a moot question as to whether the Polynesians learned this trick from the mysterious folk of pre-historic Mexico, B. C. 955 or vice versa, and how and when.

Throughout Mexico's rich tropical regions there are innumerable revenue-producing trees, introduced by the early Spaniards.

N o t a b l e among these is the splendid "*Cocos nucifera*" (Coconut) which is of great height, with trunks two to three feet thick. When less than seven years old it begins to bear, continuing to produce huge clusters of valuable nuts during a life-time of seventy years or more.

The "Rubber-tree," however, which has contributed unknown wealth to natives and foreigners, is indigenous, and ancient records tell of the making of rubber balls by long-vanished pre-historic people as early as 955 B. C. "Tlachtli" or *Zibablan* ("tennis," acknowledged to be "the father of all ball games," was played with these rubber balls, which, despite their crudeness, "did bound and fly." Mexico's rubber country covers a vast area, beginning near Tabasco, and extending to the Guatemalan border. The trees are very large, measuring six to eight feet in girth, and they generally produce ten gallons or two pounds of rubber each year. Maturing at about twelve years, they yield a steady flow of the valuable "milk" thereafter. It is said in Mexico that "he who owns

even one rubber-tree is a made man."

Chiapas, that enormously rich southernmost Mexican state of many rivers—isolated through lack of railroads—is the habitat of innumerable trees—seventy classes of cabinet woods alone, and fifty different kinds of timber. There are the valuable ebony and huge mahogany trees, log-wood, fine pines, many species of walnut and pecans, *Cinchona* (quinine producer), the cork, the great royal palm and others. From these are taken copal, liquid amber, incense and many other things. Hundreds of fruit trees grow to magnificent proportions in this temperate, well-watered district: tamarinds, mangoes, fine oranges, ahuacates, (*Continuing on page 47*)

SAVE THE ELMS!

It Can Be Done, Says the National Conference on Dutch Elm Disease, with Adequate and Unrestricted Appropriations

By ERLE KAUFFMAN



The owner of this magnificent elm in Montclair, New Jersey, could not bear to remain at home when infection with the Dutch elm disease made removal of the tree necessary, robbing his home of much of its warmth and beauty.

SAVE the American elms! This is the cry that is being heard in many regions of the country as thousands of trees are being destroyed by the deadly Dutch elm disease along the eastern seaboard, particularly in New Jersey, New York and Connecticut.

Can it be done? The National Conference on Dutch Elm Disease, of which William P. Wharton is chairman, in a recent report to The American Forestry Association declared that it can—but under very definite conditions. First, the report stated, there must be a departure from the present policy of financing the fight against the disease. Eradication measures must no longer be applied primarily as a work relief project, with W. P. A. or other relief funds. They must be placed on a permanent basis, with adequate funds provided in the regular Agricultural Appropriation Bill.

A brief review of the government's efforts to control the Dutch elm disease will reveal reasons for this, it was declared. First and foremost the nature of the disease itself must be considered. Like the fatal chestnut



blight it differs from most other existing plant pests in that the only known means of combating it is by eradication. All known diseased trees, and those considered potential harbors for the disease, mostly dead and dying trees, must be removed, and removed immediately. But before this can be done, trained scouts must locate and mark for destruction the infected or susceptible trees. This calls for man power, especially trained man power, and continuity of effort. If men trained in scouting and climbing are discharged during the height of the campaign because of lack of funds, as has been done in the past, and if their re-employment is prohibited by regulations and restrictions governing the use of relief funds, as has also been done, it is highly probable that the American elm will vanish from the eastern landscape, the Conference believes.

On the other hand, if sufficient funds are available this coming fiscal year in the Agricultural Appropriation Bill a trained and efficient field force, unhampered by relief restrictions and uncertainties, may, under the stimulus of a sustained attack, bring the foreign elm menace under complete control.

A survey of the history of the campaign since January, 1934, will show the need for a substantially increased appropriation in the regular Agricultural Appropriation Bill for the fiscal year beginning July 1, 1936, and further that the funds should be made available by May 1. The report states:

"The Agricultural Appropriation Bill for the fiscal year beginning July 1, 1934, provided \$150,000 for Dutch elm disease control. With this money work was started to completely scout all the infected area every thirty days during the summer months of June, July and (Continuing on page 42)



For eighty years this American elm sheltered a home in Nutley, New Jersey. Despite every care it succumbed to Dutch elm disease and was removed. The house remains but the entire aspect is changed.

BEATING FIRE IN THE ROCKIES

By R. H. RUTLEDGE

A FEW decades ago a burglar made his get-away with a horse and buggy. Bloodhounds were put on the case. A currycomb used on the stolen horse gave the dogs the scent which they followed for three days, and for one hundred and thirty-five miles. They got their man.

Last year in the Intermountain Region, we had one hundred and forty man-caused fires within the National Forests. The foresters worked day and night fighting those fires. They would have rejoiced had there been one hundred and forty bloodhounds tracking down the culprits, even though many of them were unaware of what they had done.

If you sensed the real significance of these man-caused fires, you, too, would like to "get your man." And it may be interesting to know that those careless with fire stand a pretty good chance of being caught eventually because the National Forest protective system is becoming more and more effective every year. Picture, for example, the organization in one of the forests of the Rocky Mountain Region where the danger from fire is great:

Lookouts on fifty high peaks distributed so they can "spot" smoke anywhere in the forest the minute it is visible; each lookout equipped with maps and range-finding apparatus for taking bearings on smokes, a telephone or a wireless set, amber glasses, weather observation apparatus, fire tools, three-day emergency rations, telephone repair outfit, and a alarm clock. The lookout's eyes have been tested for fire detection ability. When he discovers a fire he reports immediately to the fire dispatcher for the forest, giving him its location. The fire dispatcher has maps showing every essential feature of the forest, including roads, trails, ranger stations, settlers, telephone lines and where improvement crews are working. Where there are no roads or trails, his maps show possible routes of travel, like open ridges where travel with horses is possible at a speed of not less than one and one-half miles an hour. This sounds slow, but try going over these mountains any faster with no trail. The dispatcher also has an hour control map showing for each area how many hours it takes to get a smokechaser to different points in the forest; a map showing lightning zones; a list of fire tools and equipment and of the trained overhead in four States that he can call into action if necessary. Every forest officer on the twenty-four National Forests in these four States—Idaho, Nevada, Utah and Wyoming, must be ready instantly to take a plane for any other forest.

In addition to the lookouts and the fire dispatchers, there are fire guards, improvement crews, and C.C.C. camps.

Lightning follows no road, so horses are held in readiness during the fire season to transport food and equipment to fires in roadless and trailless country. They are loaded on trucks—four horses to a truck—and speeded to the road-end nearest the fire where plows, pumps, food supplies and fire fighting equipment are stored. These are packed on the horses and transported ten, twenty, and sometimes thirty miles to the fire. The men, though, have to walk, and if it is very steep and rough or very far or hot, some men do not make it and others are so exhausted that they are not much good when they arrive. Airplane landing fields have been developed in some places, but in the rough mountainous areas, landing fields are scarce. However, both men and supplies are transported by air when feasible.

Thus when a fire starts, the whole system clicks into action. The fire dispatcher calls into action those closest to the fire and tells them the shortest route to it. Then he calls up the reserves as needed. If the fire was started by a careless camper or hunter, it is better than an even break that the system will spot him before he leaves the forest and he will have "to tell it to the judge."

To belittle any strength of the fire enemy may mean disaster. Foresters must understand the ruthlessness of the elements. Low humidity



A forest king laid low. This great moose, victim of fire in the Wyoming National Forest, makes tragic appeal for fire-consciousness—for the protection of wildlife against an implacable enemy.

for many successive days makes the woods more inflammable. Some material burns like powder. High winds, shifting winds, burning snags throwing sparks, steep slopes, the condition of your men after long hikes or sometimes fighting with no sleep, a delayed pack-string bringing food, green men, and many other vicissitudes of the fire game may ruin your work or cripple your men, or result in even worse disasters. Wind will start spot fires for a distance of a mile. A few years ago in Idaho, lightning started seventy-eight fires in one day. Six days later, lightning started 147 fires, and four days later forty-two more—all on one Forest. Smoke was so dense that lookouts couldn't see, yet one hundred of these fires were controlled in four days, but high winds spread the others over 100,000 acres.

Last year, seventeen Forest Service employees were killed on fire suppression work, and many more crippled. In the Intermountain Region last year, fires burned 90,000 acres and about half the fires were man-caused.

But why fight fires? What good does it do? The Cen-

tral States Forest Experiment Station has found that the lower layer of soil absorbs water much more rapidly in woods than in field soil. Forest soils are more porous than field soils. At the one-inch depth the forest soils absorbed water fifty times as readily as did the field soils; at the three-inch depth the absorption by forest soils was nearly fifteen times as rapid; even at the eight-inch



A study in comparisons. The beauty of the wooded area above is a striking contrast to the pitiful, charred ruins of a forest shown in the lower picture. The word "paradise" means "wonderful park" but if you burn the trees and vegetation, your paradise needs another name.

depth, where no difference in soil density was apparent, absorption by forest soils was more than twice that of the field soils. Although these figures are only relative, they clearly indicate the tremendous water-holding capacity of a forested area in contrast to the resistance to absorption and the rapid run-off from cleared lands.

The forest litter is of great importance. It serves as an absorbent, acts as a

mulch or insulation against rapid evaporation, prevents compaction of surface soil by impact of rain, decomposes and furnishes plant food, and serves as a medium for microbiological activities.

Structure of forest soil has been developed through long periods of time. Root penetration, expansion and contraction with changes in temperature and moisture content, and activities of worms, insects, and animals, tend to make soil porous. The forest is a builder and a preserver of soil porosity. The penetration of roots and their eventual decay leave the soil interpenetrated with tube-like cavities. Destroying the forest litter or the forests themselves by fire leads to erosion and to floods. Hence fires have a very direct relation to your water supply.

Mr. David E. Lilienthal, a director of the T.V.A., has said:

"We have come to think of natural resources principally in terms of our forests and our minerals. But our greatest natural resource, except, of course, the people of the country themselves, is the soil. The soil is in real earnest the very basis and foundation of our life. And that soil is being rapidly misused, mismanaged and, in truth, being actually destroyed at an appalling rate.

"Every year in this country erosion destroys soil equivalent to the total tillable area used for the growing of crops in the entire nation of Japan. Seventy-five per cent of all the land in cultivation in our country is being seriously affected by the forces of erosion."

Fire is a general and devastating cause of erosion.

With every drop of water at a premium in this irrigated region, no one will question the necessity of keeping our watersheds functioning properly. A menace to our water supply is a menace to life itself.

Even easier to understand is the loss which fires cause to supplies of timber and forage upon which lumbering, wood products for ranchers, and the livestock industry depend.

Then, too, burned forests plus smoke do not attract tourists or enhance the recreation value of our mountains. Nor do fires help the game or fish. The word "Paradise" means "Wonderful Park." Burn the trees and vegetation and our paradise needs another name.

If the public really sensed the situation, what could it do to help? Probably the most important thing would be to remove the barrier of indifference which seems to surround all human beings. John Fiske says the most essential feature of man is his improbableness. So in this problem it is essential that we assume man's attitude can improve. But it is no easy task to break down that barrier of indifference. In an article entitled "And Sudden Death," F. C. Furnas says:

"Publicizing the total of motoring injuries—almost a million last year, with 36,000 deaths—never gets to first base in jarring the motorist into a realization of the appalling risks of motoring. He does not translate dry statistics into a reality of blood and agony.

"A passing look at a bad smash or the news that a fellow you had lunch with last week is in a hospital with a broken back will make any driver but a born fool slow down at least temporarily. But what is needed is a vivid and sustained realization that every time you step on the throttle, death gets in beside you, hopefully waiting for his chance.

"An enterprising judge now and again sentences reckless drivers to tour the accident end of a city morgue. But even a mangled body on a slab, waxily portraying the consequences of bad motoring judgment, isn't a patch on the scene of the accident itself. No artist working on a safety poster would dare depict that in full detail."

If indifference to this horrible reflection on a civilized

nation is so impregnable, one can realize how much more difficult it is to make everybody forest-fire-conscious. Yet it must be done.

Fire consciousness as it should be is well portrayed in the story of Two Matches, in which Robert Louis Stevenson wrote:

"Here is a pretty state of things," said the traveler. "Dying for a smoke, only one match left, and that certain to miss fire! Was there ever a creature so unfortunate? And yet," thought the traveler, "suppose I light this match, and smoke my pipe and shake out the dottle here in the grass—the grass might catch on fire, for it is dry like tinder; while I snatch out the (Continuing on page 43)



An example of erosion in the Rocky Mountains. "Every year in this country erosion destroys soil equivalent to the total tillable area used for the growing of crops in the entire nation of Japan," says a Director of the Tennessee Valley Authority.



EDITORIAL

Who Will Grow Our Timber?

CONSIDERING the large sums of money which the present Administration is spending for forest and soil conservation, it is difficult to reconcile the President's action in including lumber products in the recent Canadian trade pact. The volume of lumber import favored by the treaty, it is true, is small, but the item carries a large significance in its evasion of a direct and sound approach to the forest problem. The theory that getting our lumber from Canada or other outside countries will solve our forest problem because it will save our own forests runs away from the real problem, which is one of land use. The solution lies in getting someone to grow timber on our forest lands continuously and permanently, and that, so far as private endeavor is concerned, will turn upon a reasonable assurance of markets for the wood products grown.

Certainly opening the door for Canada to come in and take part of a lumber trade grown too small adequately to support American forest properties and their 400,000 wage earners serves no conservation or land use ends. In fact, the course appears to be conservation in reverse in that the policy is likely to deter Americans from engaging in the commercial growing of forests, thereby hardening the problem of tax delinquent lands which today is burdening hundreds of counties throughout the nation. Neither is the course consistent with the Administration's early gesture of promoting the growing of forests by private industry. No owner of forest land can be expected to spend money growing trees if Canada or any other country may undersell him in his own local markets. That Canada apparently can do in northern markets by virtue of a lower wage scale. The effect, it seems logical to expect, will be to frighten American timber owners into liquidation of their forest properties and abandonment of any plans they may have for long term timber-cropping and permanent land ownership.

The American public may well ask "who will grow our timber?" If private endeavor is outlawed from gainful operation of forest lands by shortsighted public policies,

then the Federal Government and the States sooner or later will have to take over the whole task of keeping lands suited for no other crop green with trees. Is that what the American people want and are they prepared to pay the price?

America, (it must be remembered,) has five hundred million acres of forest land, three-fourths of which is now in private ownership. The character of this land is such that trees and trees only will maintain its productivity and pay its way in the economy of the nation, but only if the products of the forest are assured a broad and continuing demand in the nation's markets. Without markets private forestry cannot be justified and public forestry cannot put forest land to economic use. Both the government and the public seem consistently to lose sight of this truth and its corollary that in this direction lie the realistic benefits of self-sustained employment, independent support of homes and communities and permanent fiscal solvency of the land on which the forest grows.

Instead of policies which tend to devalue American stumpage, to handicap and discourage commercial growing of timber or to drive American wood out of our own markets, the Federal Government, if it is ever to cap its forestry undertaking with economic success, must place far greater emphasis on activities designed to strengthen and extend our market outlets for timber crops. Large sums of federal money are being spent to protect forest lands from fire, to study how better to grow trees, to acquire land for forest purposes, to plant trees. All of these endeavors are important, but equally if not more important from now on are activities to extend the uses of wood and to assure lumber markets that will give economic substance and incentive to permanent forest land use. This calls for a larger and much more vigorous program of scientific research to reveal all the latent possibilities and applications of wood in modern life. It will avail the American public little to spend each year great sums growing trees if in the end the undertaking, figuratively, must go into the hands of a receiver for want of markets.



FIELD AND FOREST FOR BOYS AND GIRLS



BOWS FROM THE YEW

By
E. B. LOOSLEY

ABOUT forty years ago, Frank Needham, living near the Klamath Indian Agency, in Oregon, had a bow and arrow that made him the envy of every other boy in the vicinity. It was a "humdinger," they told each other, the best they had ever seen.

Where had it come from? Who made it? These were just a few of the questions showered upon Frank by his friends. At first he just smiled at them, refusing to reveal the origin of his prize. But when he saw how eager, how sincere they were, he told them that the bow and arrow had been presented to his father, a teacher, by an old Indian who regarded him highly. It was sort of a souvenir, for the Klamath Indians had graduated long before to the muzzle loading rifle and to the "Singing-Minnie," a gun having a bore of half an inch and first used by the soldiers who fought the renegade Modocs in Northern California and Southern Oregon, about 1872.

But what Indian? Frank knew and he told them. Immediately the boys converged on the red man. The bow? Sure, he remembered it. A very good one—made from the wood of yew. Yew? Was that better than juniper, the wood they had been using in making their bows? The old Indian told them it was—much better. But where could they find this yew wood?

This the Indian would not reveal—at least, not directly. He found it, he said, in the vicinity of the natural bridge that spanned the Rogue River, not far

from Crater Lake. More than this he would not tell. So the boys, being wise in the way of the Indian, produced a prize jack-knife, a gaudy handkerchief and a supply of tobacco, the latter acquired by raiding their fathers' home supply. With these inducements, they persuaded the Indian to bring them a quantity of yew wood; and with a handful of buttons, obtained by the simple method of ripping them from their clothing, they were able to get obsidian, which the Indians picked up at Glass Mountain, in Northern California, for their arrow heads. A few more buttons and trinkets, and the Indian showed them the secret of fashioning a bow from the wood of the yew tree, and the art of shaping obsidian for their arrow heads.

As a result of this Indian wisdom of many years ago, the young archers as well as the old in Southern Oregon today make their bows from the wood of the yew. But not only in Oregon is the fame of this wood for bows known. Archers everywhere are using it.



While there are many different kinds of yew trees, the species from which the Indians fashioned their bows and from which the white man fashions his today, is known as the Pacific yew. It is found along the Pacific Coast from Alaska to British Columbia, in Canada, and then down through Western Washington and Oregon to California. It may be found as far east as Idaho and Montana, where it is sometimes called mountain mahogany. In Northern

California, and in some regions of Oregon, it is referred to as western yew.

Charles Roberts, of Klamath Falls, an enthusiastic archer, has some interesting things to say about fashioning a bow from the wood of yew. "It is essential to use both sapwood and heartwood—sapwood to insure against breakage and heartwood for resiliency. The bowyer uses a piece of wood containing one-quarter inch of sapwood and two and one-quarter inches of heartwood, making two and one-half inches from which he shapes his bow. This portion is split out, following the grain of the wood. When polished, the yellow-white of the sapwood and the red of the heartwood make the bow look as though the work were inlay."

He exhibited a stick of wood six feet long and free from knots. This is difficult to find in trees around Klamath Falls, and while six continuous feet commands a higher price, this archer claims that two lengths taken side by side from a shorter length, and spliced together in the middle, are stronger and better attuned as the wood is of the same texture. In the longer piece one end of the stick may vary so in texture that the

bow will not have a proper balance and throwing power. In making arrows three feathers, preferably from a goose, and from one wing only, are selected. Turkey feathers are also used and are durable.

There is something in archery that calls for good sportsmanship. That is why last year Mrs. C. E. Peterson, a nationally known archer, was asked to instruct the Girl Scouts of Oregon. Archery develops muscle, but more than that, accuracy.

October and November, when the sap is down, is the time to get bow wood. Then it takes from one to three years to season the wood properly. It has been found that kiln-drying is not the thing to do with bow timber.

As the Indian of long ago said, "Hi-yuh-skookum," of this yew for making bows, so says the Oregon archers as they run their hands over the polished surface of their treasures, "Hi-yuh-skookum."

They claim that the Pacific yew makes a bow with which one can get the best of results—it makes for the swiftness of an eagle, has the force of a bolt of lightning, and yet the suppleness and grace of a swallow.



TREES AND THEIR USES

No. 11 - - - HOLLY

American Holly, the tree we associate so closely with Christmas is generally found in moist woodlands from southern Massachusetts to Florida. And throughout the Gulf States, it has shiny, leathery leaves, bright red berries, and most frequently grows to a height of from 20 to 45 feet.

THE CUSTOM OF USING HOLLY AT CHRISTMAS HAS COME DOWN TO US FROM EARLY ENGLAND AND IS INSEPARABLE LINKED WITH THE FESTIVE SPIRIT OF YULETIDE. BEFORE THE CHRISTIAN ERA, EARLY EUROPEANS GAVE HOLLY A PROMINENT PLACE IN THEIR PAGAN RITES.

IN COLONIAL DAY HEDGES OF HOLLY WERE USED IN THE LANDSCAPING OF HOMES.

THE WOOD OF HOLLY IS WHITE, CLOSE-GRAINED, TOUGH AND NOT STRONG. IT ADAPTS ITSELF WELL TO SCROLL WORK AND IS USED BY THE CARVER AND DECORATOR BECAUSE THE COLOR AND TEXTURE OF THE WOOD CLOSELY RESEMBLE IVORY. THE SUPPLY OF HOLLY IS LIMITED AND SCATTERED. IT IS SPARSLY RENEWED AND IN TIME NATURE WILL NOT BE ABLE TO KEEP UP WITH THE DEMAND FOR THE TREE.

HOLLY

Ilex opaca. Aiton

THE glossy, yellow-green spiny leaves and red berries of holly are usually associated with the Christmas season. The tree is less well known than the foliage, but is of economic importance in

several southern states, where it frequently grows forty to fifty feet high, and occasionally eighty feet. The trunk may be one or two feet in diameter, twenty feet long and tapers rapidly. Occasionally specimens four feet in diameter have been reported. The crown is frequently narrowly pyramidal with many short, spreading, nearly horizontal branches. Superficially resembling the English holly, *Ilex Aquifolium* Linn, the American holly grows naturally from the coast of Massachusetts, where it is a shrub, southward into Florida, and throughout the Mississippi Valley from the Gulf of Mexico to Indiana. In the hardwood bottomlands it grows in association with the oaks, and on the flat, sandy, coastlands among the pines. Although capable of growing on poor soil, best growth is achieved on deep, fertile, moist soil, and the largest trees are found on the rich bottomlands of eastern Texas and southern Arkansas. The growth is slow but trees may reach an age of one hundred years or more.

The spiny toothed, alternate evergreen leaves are thick, leathery, and firm, from two to four inches long and one to one and a half inches wide. They are dark, shiny green above and paler, tending toward yellow on the lower surface. The mid-rib and lateral veins are prominent on the lower surface, and the stout stem, or petiole, is half an inch long and grooved. Leaves remain on the tree for three years and are shed in the spring.

Ilex, the classical name of the evergreen oak of southern Europe, with leaves similar to holly, is one of five genera of the large family *Aquifoliaceae*, meaning "trees with needles on their leaves." Thus the Latin name of both family and genus refers to the spiny character of the leaves. *Opaca* probably refers to the thick, opaque quality of the evergreen leaves. The name holly may be derived from its early use during the holy week. Of thirteen members of the genus *Ilex*, growing in the United States, *Ilex opaca* is the only one of economic importance.

The inconspicuous four petaled white flowers appear in small clusters in the axils of the young leaves, or scattered along the shoots of the current year's growth. The flowers of the two sexes are borne on separate trees. The pistillate ones develop into small, red or yellow berry-like fruits and remain through the winter on the tree. The pulpy covering is relished by birds, but the four hard, ribbed nutlets within each berry are not digested. New seedlings are frequently the result of distribution by birds. Although attractive to birds, the berries may develop illness when eaten by human beings.



American holly frequently grows forty or fifty feet high and develops a dense, pyramidal crown with many short, nearly horizontal branches.

Leaves and bark of holly, and other *Ilex* plants contain ilicin, a bitter material possessing tonic properties. Holly leaves have been used to treat fevers and rheumatism. Paraguay tea, known as *Yerbe de Maté*, is derived from one plant of this genus, and cassina tea from another.

The smooth, light gray bark is approximately a half inch thick and becomes roughened by wart-like excrescences in old trees. In color and texture, it resembles the bark of beech.

The wood is hard, tough, close-grained, not strong, but moderately heavy, weighing thirty-six to forty pounds to the cubic foot when air dry. The heartwood is creamy or ivory white when first cut, turning brownish with age or exposure, and takes a high polish. The sapwood is wide and whiter than the heartwood. It is used for cabinet work, turnery, small musical instruments, and, because of its similarity to ivory, as keys for pianos and organs. Its fine grain makes it useful for wood engraving. Present supplies of merchantable sizes are limited and scattered.

Holly is tolerant of shade, will recover from suppression after growing years under heavy shade, and young trees are capable of producing sprouts.

A deep tap root supported by numerous spreading laterals makes possible the transplanting of young trees. The best time to move them is in the fall, when the new wood is nearly ripened, or in the spring before new growth starts. When transplanting wild hollies from the woods, the tops should be severely pruned and most of the remaining leaves removed.

Holly berries may be sown in beds and covered with a heavy mulch until the spring of the second year, when the seed will germinate. Thereafter, the mulch should be removed and the seedlings given partial shade. Cuttings of the current year's ripened wood, with a little of the two-year-old wood and three or four leaves, made between August and December, may be rooted under a glass frame, or in a green house. These should be set slanting in about six inches of mixed peat moss and soil, with the leaves lying flat on the surface. Being dioecious, those who desire trees ornamented with red berries should plant mostly pistillate ones.



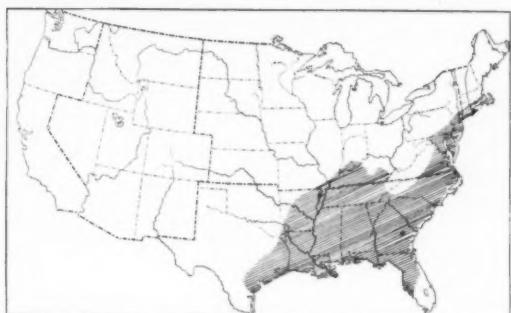
The spiny toothed, leathery, alternate evergreen leaves remain three years on the branches and are shed in the spring. These, with red berries, are widely used for Christmas decorations.



The bark is light gray, approximately a half inch thick and becomes roughened on old trees.



Inconspicuous white flowers with four petals and stamens are borne from April to June in the axils of young leaves and on shoots of the current year's growth.



Natural range of holly in the United States.

AUTOBIOGRAPHY OF A RING-NECKED PHEASANT

(Continued from page 10)

in the sunlight. Gradually, by pulling in my head, I was able to shut down my neck feathers so that my conspicuous white collar was completely concealed, and thus I became a part of the surroundings in which I crouched.

Every mammal and bird except my sister had scurried to cover. I could see her eating some wild weed seeds. Whatever it was that caused her to forget for the moment to be ever alert proved her undoing. Again, as upon the night of the murders by the weasel, I tried to send a warning to her, but what followed happened so quickly that my call was never completed. The enemy, directly above, volplaned downward in a fierce and sudden swoop, crashing upon her beautiful brown shoulders. Steel claws, a tearing beak, the lightning flash of wings, and my sister was no more.

During this brief interval, my wild, inherent hatred for this, the Cooper's hawk, fiercest of the predatory birds, was suddenly reborn. My nerves tingled and my muscles tensed. The desire for vengeance was stronger than fear, and in one terrific spring and a whir of wings I landed with my whole weight squarely upon the head of the killer. I felt my spurs sink deeply into yielding flesh; my needle-sharp bill penetrated through and beyond an eye.

It must have been the visual stimulus that had set in motion my savage attack upon the hawk. I had followed a natural unreasoning impulse, an action based upon inherited knowledge. My domestic characteristics were gone. I was now the wild cock pheasant of the low-rolling, scrub-covered hilly region of eastern China, from whence had come my ancestors. I was alone in an environment in which only those skilled in the art of detecting and avoiding danger ever survive, or, in its presence, are able to stand and fight.

The hawk dropped my sister. She was too heavy to carry away. I flew from his back into the branches of an old oak and watched the killer depart with short, powerful wing strokes. My companion of sedge, thicket, and field was dead.

I flew from my perch to the soft, padded floor of the woodland, stretched my neck, and expressed my emotion by crowing. Its piercing harshness sped through space and echoed back in all its discord. The forest came to life. Chickadees appeared from nowhere. A brown creeper flew to the base of an oak and began his search for insects and their eggs. A blue-jay gave vent to his imitative calls and whistles. A woodpecker continued his interrupted tapping. My voice had quieted their fears.

That night, for the first time, I did not return to my old roosting grounds. Instead, I flew to the marsh and selected a roost in a dense growth of matted sedge and goldenrod. I

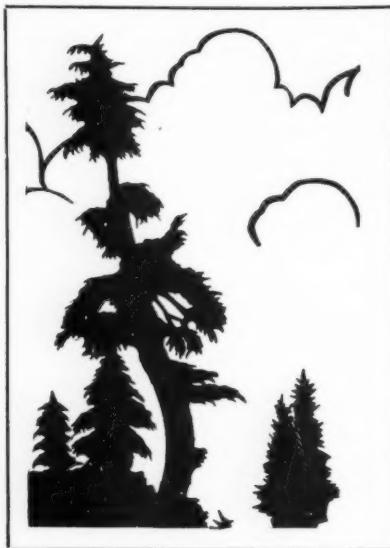
was cold, hungry, and lonely, but soon fell fast asleep.

Early in the morning I was awakened by soft, white flakes which melted in my mouth when I tried to pick them from my body. This was my first acquaintance with snow. I was soon to learn how uncomfortable it could make me. After stretching my neck and fluffing and preening my feathers, I

did not immediately follow my usual custom of hunting for food. Instead, I reviewed the past and contemplated the present. It was during the summer that I liked best to hunt through the open fields and woods for plant bugs and leaf hoppers which suck the sap of plants, robbing them of food and water. Once, when the farmer was plowing the moist and heavily sodded pasture, I followed the furrows and found the shiny and slippery brown or yellow wireworms which tunnel under sprouting crop plants and eat their roots. These worms are the young of the "click beetle," which usually make a clicking noise while I hold them in my bill before crushing their heavily armored bodies. Sometimes in the freshly turned soil of the furrow I found big white, soft-bodied, sightless grubs, which are the larval form of the May beetle that lives for three years underground, feeding on the roots of grass and garden plants, or on the roots of young evergreen trees. In the evening I could catch the older, hard-shelled, buzzing May beetles as they came up from the grass and fields to feed upon the leaves of the trees. I was also fond of grasshoppers, once so abundant in the very marsh in which I now crouched. All of these insects had long since fallen into their winter's sleep.

I recalled grains such as buckwheat, oats and corn; and the fruits of dogwood, raspberries, wild grapes, and huckleberries. Sometimes I relished the soft, green leaves of clover and alfalfa. But today, with the sting of winter in the air, it was another matter for me to find food. All of the plants that I preferred had leaved, flowered, fruited and passed with summer. I must now hunt for the wild seeds of ragweed, the foxtail or smartweed plants, or for the dried fruits left on vines, shrubs and trees. From these, or whatever else might be available, I must obtain sufficient nourishment to maintain vitality, weight and body heat in order to resist the wintry chill of short, bleak days, and long, black nights.

Throughout the day I found shelter from the cold and piercing wind under the protecting cover of the sedges and the boneset and goldenrod which grew in the marsh. For food I found upon the broken and bent stems of the goldenrod the galls of the gall-fly and gall-wasp. These galls had been made by the larvae, which I found sleeping soundly inside. A downy woodpecker and (Continuing on page 44)



HEROIC PINE

By Ida May Borncamp

The sea-wind has an azure note,
The rhythmic waves break high;
While somber hemlock in the clouds
Forever seems to sigh!

Her awe-inspiring music floats
Upon the eddying air;
Her perfume rises heavenward,
And peace is everywhere!

With grim tenacity of life,
She clings to Mother Earth;
Enduring hardships, braving all—
A tree of noble birth!

Heroic monarch of the crag,
There's work for you to do;
To guard your promontory bold
A century or two!

Oh, be my model, fearless one,
And may my soul drink deep
Of strength and courage drawn from you,
Upon the rugged steep!

(Silhouette by Helen Bay)

nourishment to maintain vitality, weight and body heat in order to resist the wintry chill of short, bleak days, and long, black nights.

Throughout the day I found shelter from the cold and piercing wind under the protecting cover of the sedges and the boneset and goldenrod which grew in the marsh. For food I found upon the broken and bent stems of the goldenrod the galls of the gall-fly and gall-wasp. These galls had been made by the larvae, which I found sleeping soundly inside. A downy woodpecker and (Continuing on page 44)

AROUND THE STATES

WITH
THE AMERICAN FORESTRY ASSOCIATION



1935 Fire Losses Low

With rains and early snows ready to drop the final curtain over the few scattered sections where dangerous fire weather conditions still prevail, the Forest Service was able to predict late in November that 1935 will be one of the most successful forest fire fighting years in the records of the National Forests.

Although the number of fires reported in the National Forests this year is almost equal to those of 1934, the acreage burned was only about thirty-eight per cent of that devastated by fire in 1934. Records up to November show

Propose New State Forests

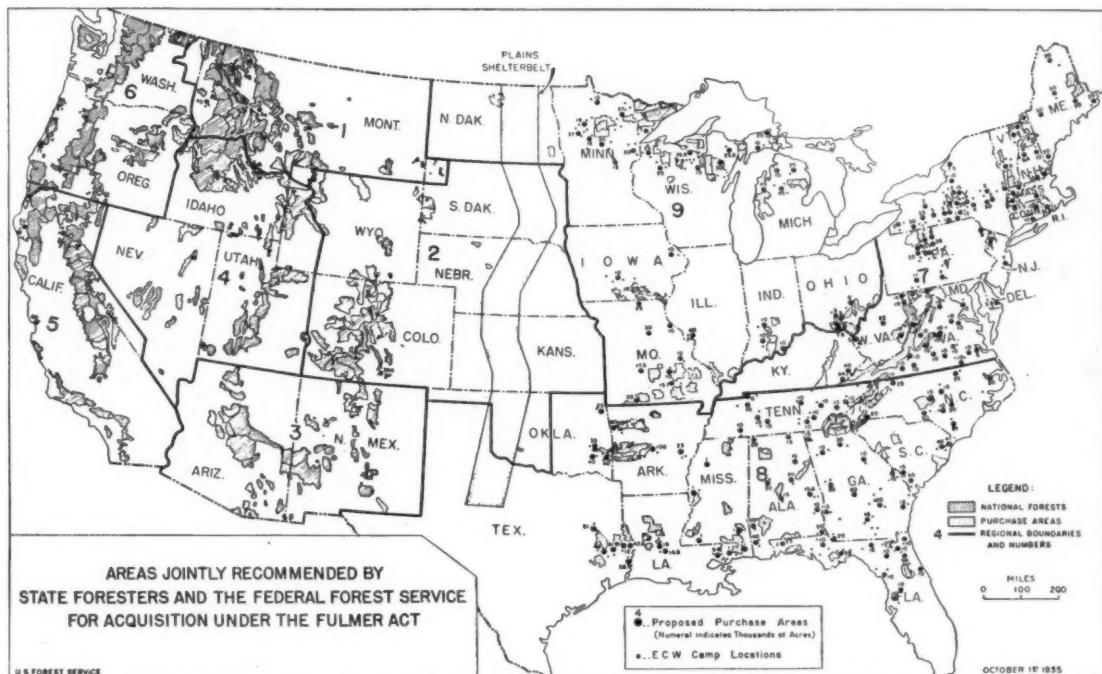
An "Initiative Petition," requesting authorization for the Massachusetts Commissioner of Conservation to purchase and hold 500,000 acres of forest land for state forest purposes, has been signed by 23,207 registered voters and filed with the State authorities by the Massachusetts Forest and Park Association.

The proposal, which will be presented to the voters at the next regular election, would authorize land purchases over a period of ten years at prices comparable to the current average limitation of five dollars an acre.

Isle Royale Purchase Approved

Announcement that \$705,000 has been made available for the acquisition of 121,000 acres of private land on Isle Royale, in Lake Superior, for emergency conservation work purposes was made on December 5 by Secretary of the Interior Harold L. Ickes. It is expected that two or three C.C.C. camps will be assigned there, as soon as weather permits, to carry on the work of fire hazard reduction and improvements.

Legislation passed by Congress in 1931 provided for the eventual establishment of the



NEW PUBLIC FORESTS IN THE MAKING

Large dots indicate areas aggregating more than 4,000,000 acres where State Forests may be acquired under the provisions of the Fulmer Act. Small dots show the location of C.C.C. camps more or less dependent upon such acquisitions for continued productive work.

that 9,788 fires burned a total of 192,534 acres. Last year at this time, 10,011 fires had burned 532,880 acres. In the period from 1931 to 1934, the average yearly number of fires during the same length of time was only 7,926—but the average annual toll was 440,802 acres.

More than half of the fires reported this year—5,777—were man-caused, compared to 5,282 last year. These fires were started by brush burners, residents on newly acquired lands who persisted in "burning-over" annually, and campers, hunters and tourists.

In the western National Forests 1935 rates as a banner year, second only to 1930. Up to November, 93,312 acres in the western regions had been burned. The 1931-34 yearly average for National Forests west of the Great Plains shows practically 400,000 acres burned over.

In support of the proposed program, Harris A. Reynolds, secretary of the Massachusetts Forest and Park Association, declared that more than 1,000,000 acres in Massachusetts have been stripped of successive crops of timber or burned over so that they are classified as wild or waste land. Most of it is assessed at ten dollars or less an acre, and thousands of acres are escaping taxation. Placed under forest management, these areas, he maintained, would produce more value in timber annually than the present value of the land, provide permanent employment for 20,000 men, add new areas of beauty for public recreation, provide new opportunities for the restoration of wildlife, make available natural reservoirs for the conservation of water, and extend more opportunity for profitable work by the C.C.C.

area involved in this project as the Isle Royale National Park. It is possible that Congress now may see fit to transfer the land acquired for Emergency Conservation Work to the authorized park project. However, unless all the lands involved in the project can now be obtained with the funds available, Isle Royale may never achieve National Park status.

Its comparative inaccessibility from the mainland, together with its rare combination of forested terrain and inland waterways, has brought about a wildlife sanctuary, where moose, woodland caribou, and many varieties of small mammals and birds have found shelter since time immemorial. Its waters are considered the greatest breeding ground for the herring gull in the Great Lakes.

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STRENGTH OF C.C.C. SET AT 428,000

Robert Fechner, Director of Emergency Conservation Work, on November 29 announced that the strength of the Civilian Conservation Corps has been set at 428,000 enrolled men for the quarter beginning January 1, 1936. This figure represents a reduction of 72,000 men below the present authorized strength of 500,000 enrollees. The readjustment in the maximum strength of the C.C.C. will be effected gradually by following a policy of not replacing enrollees who drop out of the corps until the strength falls below 428,000 men.

"This reduction of the enrolled strength of the corps is being made as a part of the general program which calls for the gradual reduction of the C.C.C. to 300,000 men by July 1, 1936," Mr. Fechner said. "The War Department estimates that discharge of men to accept employment or for other reasons will lower the strength of the C.C.C. to approximately 400,000 on January 1. In order to raise the strength of the Corps at that time to the authorized strength of 428,000, the War Department will enroll about 30,000 new men as replacements during the first half of January."

In making his announcement, Director Fechner

stated that reports from the nine corps areas to the War Department disclosed that a total of 559,000 new men were enrolled in the Civilian Conservation Corps between April 1, 1935, and November 15, 1935. These young men were enrolled in three groups. A total of 116,000 was enrolled as replacements in April; 333,000 were enrolled as replacements and new additions to the corps during the expansion enrollment program which began on June 15 and terminated on August 31, and 110,000 were enrolled as replacements during October and the first fifteen days of November. The enrolled strength of the corps when the April enrollment began was 241,810. The enrolled strength on November 15, excluding Indians working on Indian reservations and men engaged in reforestation work in Hawaii, the Virgin Islands, Alaska and Puerto Rico, was 480,000. The enrolled strength as of November 23 was estimated at 474,000.

Mr. Fechner called attention to War Department figures which disclosed that 88,467 young men and war veterans had been discharged from the C.C.C. camps to accept employment during April, May, June, July, August, September and October.

SILCOX SEES LAND USE AS KEY TO PROSPERITY

The United States has embarked on a national conservation policy aimed at insuring future prosperity, a policy unique in the history of the world, F. A. Silcox, chief forester, said in the annual report of the Forest Service, issued December 13.

"History affords no case of a recognized land-use problem like that now to the fore," Mr. Silcox declared. "Civilizations have waxed and waned with their material resources; dwindling means of livelihood have been a prolific cause of domestic disorder, class uprising and international war; but never before have the people of a great country still rich in the foundations of prosperity sought to forestall future disaster by applying a national policy of conservation—of which planned land use is the central core."

Forestry, the chief forester said, "has had the leading place in defining the issues and presenting them in concrete terms. For conservation as a question of national policy was born in the struggle to attain a sound policy of forestry."

Mr. Silcox contrasted the present forest policy with that practiced by the government up until the early years of this century—a policy which hastened the disposal of the Public Domain.

"The intent of the laws designed to convey the Public Domain timberlands in small tracts to individuals desiring to use them for personal and permanent use was frustrated on a gigantic scale," he said. "Actually, a man who had entered a claim on land chiefly valuable for its virgin forest could ordinarily cash in on his acquisition only by selling it for consolidation into a much larger holding. Actually, too, the inducement leading to private acquisition was not the prospect of profiting by putting the land itself to use, but the value of the grown timber for exploitation. Hence a strong trend toward a purely temporary occupancy. If, after the merchantable timber was cut the land could not be sold, all that was necessary was to stop paying taxes and let it go back, skinned of its value, to public ownership."

"So the original policy of land disposal did not meet its social objective. It operated, instead, to create a transitory lumber industry."

It is such devastated land, of which millions of acres have drifted or are drifting back into the hands of the public through tax forfeiture,

unable to support communities, that today presents the biggest problem looming between the nation and a wholly successful land-use plan, Mr. Silcox explained. It has been the Federal policy since 1911 to buy lands of this type for National Forests. With exceedingly limited purchase funds in comparison to the great acreage of land urgently needed in public ownership, no other course was practicable.

"But to wait always until the forest has been so wrecked that only the public purse can possibly meet the expense of reclaiming it, or to limit public forestry to lands too poor to make timber production cover its cost, would mean to lose sight of the true objective of public forest policy. That policy must place first the need of the people for efficient land use as a means of gainful employment and stabilize and permanent prosperity."

"The essential point is that unless public acquisition is stabilized, programmed and pressed forward on broad lines with all possible speed, the potential capacity of the forests to provide work for a large dependent population and to furnish raw materials for industry and commerce will inevitably diminish instead of being built up."

Special plans to achieve such stability in communities on and adjacent to National Forests were launched during the past year, according to the annual report, in some forty community projects. Under this program, plans have been laid for 1936, which, if approved, will give employment to nearly all the suitable resident unemployed forest workers of those communities.

Tangible progress was made on the Great Plains Shelterbelt project, Mr. Silcox reported. Planting was completed on 125 miles of shelterbelt and on 4,800 farmsteads. Emergency Conservation Work, too, has continued its constructive work. With an average of 100,000 young men on the National Forests, plus those on state and private forest lands, the Forest Service has planned and supervised seventy per cent of the work of the C.C.C., which by July, 1935, had reached a total of 38,605,470 man-days. Projects were completed to the value of almost \$344,000,000.

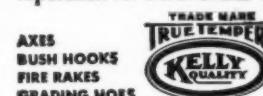
More than 2,000,000 acres were added to the present National Forest system in 1935. Mr. Silcox said. Timber sales during the year showed an increase of more than 75,000,000 board feet.



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TO CONSIDER SANTEE-COOPER WILDLIFE FEATURES

The Santee-Cooper Power and Navigation project, contemplating a \$34,000,000 power dam and development in the Carolinas, was declared economically feasible in reports submitted to Secretary of the Interior Harold L. Ickes by the Special Board of Review on November 4, but the case was held open for further consideration of conservation features.

The project has been protested by many organizations and individuals interested in wildlife conservation in the lower Santee basin on the ground that the engineering structures will harm all forms of wildlife and eventually large stands of growing timber.

The Santee River with its tributaries drains an area of 15,700 square miles in both North and South Carolina and is the fourth largest river system on the eastern seaboard south of the St. Lawrence River. Engineering projects contemplated would result in the erection of a dam near Ferguson, South Carolina, and would divert the major portion of the flow of the river into a secondary reservoir and thence into the Cooper River.

Those interested in the preservation of wildlife in the region declare that the engineers' proposal to divert all of the flow, with the exception of 500 second feet, from the lower Santee basin into the Cooper River will change the area below the dam from one essentially of fresh water swamp and low-lying ground to one distinctly saline. Great stretches of old rice fields which provide food supply for hundreds of thousands of wild ducks and other migratory water fowl would be destroyed, and

the existence of contiguous stands of mature cypress and hardwood forests would be threatened. The swamps near the mouth of the Santee River provide a well known wintering area for surface feeding ducks, while the cypress swamps provide refuge for many typical southern birds, as well as for deer, bear and wild turkey.

In addition, the Federal Migratory Bird Refuge at Cape Romaine, near the mouth of the Santee, would undoubtedly suffer and lose much of its effectiveness. To take advantage of these unusual wildlife conditions, clubs and individuals interested in hunting have invested hundreds of thousands of dollars in lands, buildings, levees and dikes to aid in the production of food for the wildfowl. Such investments are all jeopardized, it is pointed out, in the event the contemplated dams and reservoirs are constructed.

Studies by representatives of the Biological Survey indicate that at least forty square miles of good duck habitat near the mouth of the Santee River will probably be ruined. Likewise on the upper Cooper River where fresh water is now impounded in old rice fields at least eighteen square miles of equally good duck water will be similarly affected. The character of another area of 264 square miles on the Santee River directly below the proposed dam will be changed, and behind the two larger dams the reservoirs will inundate over 200 square miles of country now inhabited by many kinds of upland game.

STATE LEGISLATORS

Nine states enacted laws during 1935 authorizing Federal acquisition of land for National Forests, four extended the scope of previous laws, and in many other states legislation was passed beneficial to conservation of forest resources.

Rhode Island, Ohio, Indiana, Idaho, Montana, Utah, California, Oregon and Washington were the states enacting laws to authorize and encourage Federal land acquisition, bringing to thirty-four the total of those states which have passed such laws. In some cases legislation carried various forms of limitations, in others there were no specified restrictions. Maine, New Hampshire, Missouri and Arkansas modified existing laws.

Washington authorized its State Forest Board to issue utility bonds up to \$300,000 for purchasing private lands suitable only for growing timber. New York, by concurrent resolution, approved the Federal program of purchasing marginal and submarginal farm lands for reforestation and other conservation purposes. Arkansas authorized its State Forestry Commission to set apart for permanent state forests suitable state-owned lands and lands which have reverted for taxes.

North Carolina provided for state management of Federally acquired submarginal lands suitable for state-controlled forests and other recreational areas, and also for holding vacant and unappropriated state lands which are suitable for state forests or parks. Minnesota created thirteen new state forests, made additions to three existing state forests, and authorized the director of the Division of Forestry to purchase sites not exceeding forty acres in area for administration and other forestry purposes. California authorized the director of Natural Resources to receive, hold, acquire and manage land for future development of forestry.

County zoning, which provides for setting aside areas for purposes of trade, residence, recreation, farming, forestry and conservation of soil and water supply was adopted in Tennessee and Michigan. In anticipation of the enactment of a law (the Fulmer Act) providing for Federal acquisition of forest land for ad-

AID CONSERVATION

ministration by states as state forests, Alabama, Delaware, Florida, Iowa, Louisiana, Maryland, Michigan, Minnesota, New Jersey, North Carolina, North Dakota, Rhode Island, South Carolina and Texas passed enabling acts authorizing their respective state forestry agencies to enter into cooperative agreements with the Secretary of Agriculture for the acquisition and development of state forests.

Connecticut provided that any receipts resulting from management of state forests shall go into a forestry fund, to be spent in protection, management and development of forests.

Vermont created a Department of Conservation and Development. Iowa abolished older agencies, and created a new agency to be known as the State Conservation Commission.

State forest-fire legislation was revised and fire regulations strengthened by Oregon, California, Florida, Michigan, West Virginia and North Carolina.

Idaho, Indiana, New Hampshire, North Carolina, North Dakota, Vermont and Washington enacted laws making provision for reimbursement of the Federal Government for the expense of emergency conservation work if and when the State derives a profit from the work. Similar cooperation was the result of legislation providing funds for continuation of such work and for purchase of necessary lands by Oregon, New Hampshire, Rhode Island and Iowa.

Oregon provided machinery for collecting currently taxes on timber removed from tax-delinquent property to prevent removal of timber between March 1 of each year and the tax-payment date of the subsequent year without paying taxes, then letting the land revert.

Wisconsin enacted a law permitting owners of farm woodlands suitably protected against grazing or of farm lands with a gradient of thirty per cent or more which the owner will make a reasonable attempt to protect from erosion by reforestation, to obtain complete tax exemption of both land and timber values by applying for and obtaining classification. Michigan and Alabama liberalized forest tax laws.

ASK THE FORESTER

Forestry Questions Submitted to The American Forestry Association, 1713 K St., N. W., Washington, D. C., will be Answered in this Column. . . . A Self-Addressed Stamped Envelope Accompanying Your Letter will Assure a Reply.

— 1 —

QUESTION: What causes leaves to fall in the autumn?—K. S., Pennsylvania.

ANSWER: Leaf fall is initiated by a slow diminution of the supply and the evaporation of water. The preparations for leaf fall consist of a corky growth at the base of the leaf stalk. This is accompanied by a loosening of the connection between the leaf and the twig, often also between the blade and the leaf-stalk so that the wound is largely closed up by the time the leaves are shed. Leaves may fall of their own weight without causing any tree rupture. However, leaf fall is naturally hastened by wind and also by the formation of ice in the places of separation.

QUESTION: Have any states in the United States ever attempted legislation to outlaw the steel-trap?—L. S., Wisconsin.

ANSWER: Through sponsorship of the Anti-Steel-Trap League, of Washington, D. C., laws illegalizing the steel-trap device have been effected in the States of South Carolina and Georgia (with exceptions) and in many counties of various states.

QUESTION: What type of tree is growing along the famous path in the National Monument at Sitka, Alaska?—A. K., Washington, D. C.

ANSWER: These trees are all Sitka spruce (*Picea sitchensis*), a tree limited to the coast region from Kodiak Island, in Alaska, south to Mendocino County, California, and inland in Washington as far as the Nisqually River.

QUESTION: Is there any basis for the theory that the squirrels have been forced to seek food out in the open because of a shortage of acorns? Also, is it true that this shortage of food is due to the invasion of the gypsy moth or some other insect which is destroying the oaks?—T. W. E., Pennsylvania.

ANSWER: Squirrels are known to migrate, particularly during the fall. The exact cause of such migration is not definitely known, though it seems to be caused largely by over-population. In many cases, a shortage of food has not been apparent, and squirrels have been known to leave regions well supplied with nuts and other sources of food supply.

The gypsy moth infestation is almost entirely confined to the northeastern part of the country. Eradication efforts have kept the moth from spreading west of the Hudson River. An outstanding exception of this is a colony of gypsy moth in the vicinity of Wilkes Barre, Pennsylvania. This attack has been kept under control, and there are no infestations west of this area at the present time. The gypsy moth and the brown-tail moth favor the oaks, but they will attack many other trees.



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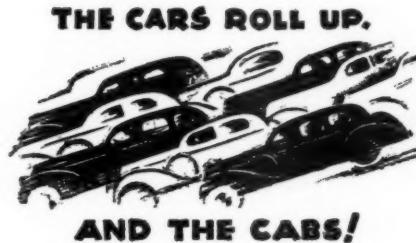
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FORESTRY IN CONGRESS

By G. H. COLLINGWOOD

The second session of the 74th Congress will convene in Washington on January 3. The present outlook is that it will be shorter both in duration and in money appropriated than the last session. There are prospects that at least a half billion dollars will be pared from the appropriation requests of the government departments and bureaus for the fiscal year beginning July 1, 1936, and the remaining items will have to be clearly justified before the Appropriation Committees.

During the closing days of the first session of this Congress, Senator Lewis, of Illinois, gave assurance that he would take the first opportunity to bring his bill, S. 2665, to change the name of the Department of the Interior to the Department of Conservation and Public Works early to the attention of the Senate. The House Committee on Expenditures in Executive Departments declined to report on, or recommend action concerning a similar bill, H. R. 7712, introduced by Representative Cochran, of Missouri. More recently, Representative Cochran, who is chairman of that Committee, announced that a sub-committee will consider the larger question of duplication of effort within all government bureaus and departments, that constructive suggestions may be made during the early part of the coming Congress.

The Robinson bill, H. R. 6594, authorizing the Department of the Interior to undertake a nation-wide recreation study of all publicly-owned lands is being revised preparatory to further consideration. This was held up during the past session following opposition voiced by the Secretary of Agriculture, and supported by The American Forestry Association, the Society of American Foresters, and others, who interpreted it as a means by which the Department of the Interior might dictate the recreation policies of the Forest Service in the Department of Agriculture, and open the way for the transfer of national forest areas to the states.

Increasing interest in plans for extending financial credit to firms and individuals owning large tracts of timber, indicate that the Fletcher-Caldwell Forest Credit bills (S. 3417 and H. R. 9197) will receive early attention. These identical bills are designed to create a Forest Credit Division within the Farm Credit Administration, making use of the existing personnel and experience of this large, federal, financial organization.

Another bill scheduled for early consideration is S. 2972 introduced jointly by Senators Carey and O'Mahoney of Wyoming, to extend the boundaries of the Grand Teton National Park, and to provide additional winter range for elk in the vicinity of Jackson Hole.

The Forestry Omnibus bill, first considered in 1933 and frequently discussed during the past session of Congress has been revised and expanded. The bill was prepared in response to a suggestion from the President, but thus far no plans have been announced as to when it may be publicly considered. It will first be submitted to the President for his approval before being introduced.

This bill would not make direct appropriations of money but would authorize appropriations to be made as desired by Congress with which to expand the existing forestry program along lines set forth in Article X of the recent Lumber Code. It may also include authoriza-

tion for continuing the Shelterbelt Project on the Great Plains, and provision for effectively carrying forward the forest acquisition program either by annual appropriations or by means of a large bond issue to make money available until expended.

The outstanding consideration in connection with next year's appropriations is that for forest fire protection for which \$2,500,000 is authorized in the Clarke-McNary Act of 1924, but for which the appropriation of \$1,587,513 for the year ending June 30, 1934, reaches the high water mark. Compared with this, the \$1,578,632 appropriated for the current fiscal year is a small decrease. To help the states and private agencies build up their organizations to include the remaining unprotected forest land and to stimulate additional appropriations by the states, an appropriation of \$2,500,000 for the coming fiscal year will be sought. Thereafter further increases await an enlarged authorization. This is one of the proposals in the Forestry Omnibus bill.

Recognizing that forests must be protected from hordes of forest insects and diseases, including western pine beetles, White pine blister rust, Gypsy moths and Brown Tail moths, and the Dutch elm disease, conservationists are urging increased federal appropriations. The current appropriations include \$250,000 for White pine blister rust control, \$400,000 for control of Gypsy and Brown Tail moths, \$261,156 for Dutch elm disease, \$252,092 for investigations of diseases of forest and ornamental trees and shrubs, and \$160,015 for research in methods of controlling insects affecting forests, forest products, ornamental trees and shrubs.

Funds for White pine blister rust control have been augmented with \$6,378,735 from the Works Progress Administration as well as by services of the Civilian Conservation Corps. This money has been budgeted so as to continue the campaign through the coming field season, but the supervision by representatives of the Department of Agriculture's Bureau of Entomology and Plant Quarantine has cost in the neighborhood of \$500,000. Inasmuch as supervisory costs can be taken from emergency work funds only by special order, a specific appropriation increase to \$500,000 is being advocated. Similarly, P. W. A. funds have been added to the \$400,000 appropriated for control of Gypsy moth and Brown Tail moth, and not less than this amount is held necessary to maintain the barrier zone from Long Island up the Hudson Valley to the Canadian border, designed to keep these pests from spreading west.

Eradication and control of the Dutch elm disease, for which Congress appropriated \$261,156 and President Roosevelt added \$2,750,000 from emergency work sources, will call for more money in that present funds will be exhausted by next July or before.

The decision of the Budget Bureau will not be known until after Congress convenes. Meanwhile, the House Subcommittee on Agricultural Appropriations, consisting of John N. Sandlin, Chairman, Louisiana; Clarence Cannon, Missouri; Malcolm C. Tarver, Georgia; William B. Umstead, North Carolina; William R. Thom, Ohio; Lloyd Thurston, Iowa; and John T. Buckbee, Illinois, has begun hearings with representatives of the Department of Agriculture.

♦ Book Reviews ♦

AN ILLUSTRATED MANUAL OF PACIFIC COAST TREES, by Howard E. McMinn and Evelyn Maino. University of California Press, Berkeley, California. 1935. Pp. 409. Illus. 415. Price, \$3.50.

The Pacific Coast states are not as rich in native trees as are the states of the eastern half of the United States. What Nature failed to provide, however, man has more than made up by bringing trees from other parts of the world. Early residents delighted in having seeds sent them from all over the world, and those of many favorite eastern trees were carried in by the early pioneers in their covered wagons. By these means upwards of a thousand strangers to the native tree flora have been introduced and have adapted themselves to Pacific Coast conditions. Of these only about 400 are commonly seen, and they are generally known by only a few botanists and foresters. Accordingly, the Illustrated Manual of Pacific Coast Trees is much to be desired.

Dr. McMinn, who prepared the text and Miss Maino, who did the more than 400 drawings, should receive grateful appreciation of Pacific Coast people for preparing so helpful a manual. For each species there is a paragraph describing leaves, flowers, and fruits and giving the basis for classification in terms of a key based on leaf characteristics. In addition, the tree descriptions include the source of each introduced species and its use on the Pacific Coast. An extensive glossary will help the layman understand the technical terms. A list by H. W. Shepherd in the Appendix will help the Pacific Coast resident to know what trees to plant for desired effect on the several sites.—E. F.

SHOOTING OVER DECOYS, by Charles W. Hamilton. Published by Bruce Humphries, Incorporated, Boston. 307 pages, illustrated. Price, \$2.00.

Here are all sorts of sportsman stories for all ages, told in an intimate, easy manner which really delights—stories of mountain lion, bear, deer, geese, ducks, and in fact stories dealing with the hunting of almost everything that either flies or walks on the North American continent. Good reading.—E. K.

THE ALLIGATOR'S LIFE HISTORY, by E. A. McIlhenny. Published by the Christopher Publishing House, Boston. 117 pages; illustrated. Price, \$2.50.

The American alligator, although very well known throughout the territory it inhabits, is a maligned and much misunderstood reptile, and but little accurate information has been recorded concerning its life history. Thus the observations of Mr. McIlhenny, a native of Louisiana, are extremely interesting and important.

With amazing simplicity he records "some of the things I have learned concerning their life's history during more than three score years of living near to and observing them." These observations cover habitat, dens, hibernation, food, rate of growth and size, teeth, voice, enemies, nest and nest building, and incubation and growth of the young alligators. He also presents many interesting facts and mis-statements about the reptile. A splendid volume, and one that is needed.—E. K.

California Makes Recreational Inventory of National Forests

A new development in the recreational survey now being made in the National Forests of California is an inventory of all the recreational resources on both government and private lands within the National Forests of the state, and also on selected lands outside their boundaries.

This inventory is the first step in the survey and consists of collecting, recording and mapping all recreational resources. It will be followed by studies and predictions of supply and demand, coordination of recreation with other forest uses, and finally by definite plans for actual site or fractional lay-outs. Each of these phases will be treated and developed separately in the recreational section of the nationwide project of Land Use Planning.

Under the direction of L. A. Barrett, assistant regional forester, in charge of the Division of Recreation and Lands of the California Region of the Forest Service, a crew of seven trained men started this new study last summer in the Lassen, Plumas and Sequoia National Forests. It is expected that work will continue during the winter months in the forests of Southern California.

Grange Urges Grazing Transfer to Agriculture

Transfer to the jurisdiction of the Department of Agriculture of nationally owned lands such as those administered by the Department of the Interior under the Taylor Grazing Act, and recommendations that the management of the National Forests be retained in the Department of Agriculture were endorsed in resolutions adopted at the 69th Annual Session of the National Grange, when representatives of thirty-five states, met in Sacramento, California, on November 13. To this was added a resolution endorsing the work of the Soil Conservation Service and recommending that the functions of this bureau be continued as a part of the Department of Agriculture.

Following is the complete text of the resolution as passed by the Grange: "We recommend that there be retained in the Department of Agriculture the complete management of the National Forests without transfer to other departments of areas, jurisdiction, or functions, and that there be transferred to the Department of Agriculture the management of other nationally owned lands of primary value for timber production, water and soil conservation, recreation, and grazing, including lands administered under the Taylor Grazing Act, but excluding those lands dedicated to special purposes such as National Parks."

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SAVE THE ELMS

(Continued from page 23)

August, with the understanding that the states would cooperate in removing diseased trees. Practical exhaustion of this appropriation during August made it apparent that the infected area was so large that many known diseased trees would be left standing through the winter unless additional funds were available. This situation was brought to the President's attention and an allotment of public work funds, totalling approximately \$678,000, was made during the fall, and became available late in December. Under the terms of the original appropriation of \$150,000, this amount had to be deducted from the total allotment, thus leaving approximately \$528,000 available for use during the winter and early spring.

"This allotment was exhausted in May, and although all known diseased trees had been removed, it was apparent that scouting work would have to be maintained. Yet despite strenuous efforts to secure them, additional funds were not forthcoming, and all field men were discharged and the work discontinued. Finally, in June, a stop-gap allotment of \$250,000 from W. P. A. funds was provided. Shortly thereafter the regular 1936 appropriation of \$261,156 became available.

"When work was resumed the regulations governing the expenditures of W. P. A. funds required that ninety per cent of the men employed be selected from relief rolls. Thus it was impossible to re-employ the bulk of the trained scouts and climbers discharged in May, and at the time of year most favorable for detecting the disease, time had to be taken to train new men. As a result the known disease area was scouted but once, a small portion a second time, while the ten-mile protective zone surrounding the infected area in New Jersey, New York and Connecticut received practically no attention. Furthermore, the men who had to be used for this work were in the main not equal to the job. The restriction that they be residents of the county in which they were to work, salary limitations and the curtailed hours of actual field work seriously handicapped operations."

Meanwhile, the National Conference on Dutch Elm Disease and cooperating agencies made every effort to secure a further allotment of W. P. A. funds, and to have restrictions lifted to permit employing an adequate number of trained scouts and climbers for the important summer work. Finally, in July, another allotment of \$2,500,000 was made. The funds became available only a few hours before the discharge of the field force would have been necessary. Shortly thereafter employment restrictions were waived with reference to a certain proportion of the men, and for a limit-

ed time to cover what remained of the scouting season.

"Since then the work has progressed without additional delay, and funds are now on hand to carry on the winter program under the regulations of the W. P. A. However, the unexpectedly large amount of work required this winter indicates that all available money is likely to be exhausted before the spring scouting season. In order, therefore, that the scouting may be fully effective when most needed there must be regular funds by May 1, 1936, for the employment of experienced and dependable men."

To insure efficiency, the National Conference on Dutch Elm Disease believes that the project should be placed, so far as possible, on a permanent basis, rather than to continue primarily as a work relief measure. To that end, all funds needed for the next fiscal year should be available in the regular Agricultural Appropriation Bill.

If, however, this should prove impossible, it was pointed out, sufficient funds should be provided for the administrative and technical supervisory force, as heretofore, and also for such expert field labor as scouts, climbers and supervisors. Rough estimates by the Bureau of Entomology and Plant Quarantine, conducting the campaign, indicate that regular appropriations of about \$1,500,000 would be required. This is one half of the total amount estimated to be needed for carrying on the work during the fiscal year ending June 30, 1937. The other half would need to be made up from relief funds, with relief labor to do a large part of the rough manual work. While not as efficient as if the entire amount were made available from regular appropriations, it is believed that the campaign can be handled fairly effectively in this manner.

In brief, it appears to the National Conference on Dutch Elm Disease, that to continue entire dependence on work relief allotments may destroy all chances of success in the eradication work because of lack of thoroughness and continuity. "A fair degree of efficiency can probably be attained if approximately half of the entire funds are carried in that bill and half in a relief allotment, provided failure of the Allotment Board to act does not make a break in the work, as was the case last year." The Conference fears, however, that, if the past year's experiences are repeated during the years immediately ahead, this elm scourge will secure such a foothold on our soil as to place it beyond hope of eradication. The present outlook is hopeful, but only the highest efficiency and thoroughness can bring the work to successful fruition.

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BEATING FIRE IN THE ROCKIES

(Continued from page 26)

flames in front, they might evade and run behind me, and seize upon you bush of poison oak; before I could reach it, that would have blazed up. Over the bush I see a pine tree hung with moss; that too would fly in fire upon the instant to its topmost bough. And the flame of that long torch—how the trade wind would take and brandish that through the inflammable forest! I hear this dell roar in a moment with the joint voice of wind and fire. I see myself gallop for my soil, and the flying conflagration chase and outflank me through the hills. I see this pleasant forest burn for days, the cattle roasted, the springs dried up, the farmer ruined and his children cast upon the world. What a world hangs upon this moment!"

With that he struck the match, and it missed fire.

"Thank God," said the traveler, and put his pipe in his pocket.

These man-caused forest fires are not only a hazard but a curse to our nation. Why not pass laws to prevent man-caused fires? Our Federal and State laws have been increasing at the rate of 10,000 a year, and it takes 125 volumes each year to contain the discussions of the courts interpreting them. If laws would do the trick we would have been living in Utopia long before now.

To quote our Secretary of Agriculture:

"Human beings are ruining land and bad land is ruining human beings, especially children."

COMMENTS ON TRUCK TRAIL POLICY

(Continued from page 6)

twigs and logs alongside become. Consequentially, at the edge of any cutting of the forest, regardless of whether it is a logging operation, or a fire lane, or a road, or a truck trail, fires burn more fiercely and spread more rapidly because the materials which burn are drier. In addition, when the mineral soil of the wild forest is exposed in road building, weeds which dry up in the autumn and make a much greater fire hazard than the normal forest vegetation, tend to become prolific.

Mr. Osborne thinks that one of the causes of increased fire danger attributed to truck trails can be eliminated by keeping the new truck trails closed to unofficial use. Personally, I do not believe this can be done. Already several of the recently built truck trails have been invaded by automobiles, in spite of the gates which guard them. Furthermore, once a road passable for automobiles is actually built, there will immediately be a strong argument that the Conservation Department is like a dog in the manger in not permitting the general public to use it. It will be much easier to open by constitutional amendment a road which already exists than it would be to authorize the cutting of an entirely new road.

Even if the truck trails could be kept closed to general travel, no attempt will be made to keep hunters, fishermen and hikers from walking along them. Because of the much greater drying of forest fuel which occurs at the edge of the opening made by truck trails than occurs along a narrow foot trail, the spread of man-caused fires will generally be more rapid along these truck trails, even if those who use them walk. This is especially important when one considers that sixty-seven per cent of the Adirondack fires in 1934 were caused by smokers, hunters,

Secretary Wallace was referring to several destructive elements, but fire is one of them.

You just can't pass the buck in this man-caused fire problem. It is as old as man himself regardless of laws.

It is an inescapable responsibility of the camper, of the hunter, of the fisherman, of everyone entering the forests to be fire conscious. Remember the admonition of Orville Leonard written under the title "Have You?"

"Have you ever seen the smoke clouds from a forest fire burning? Have you ever lived for hours in that crackling, bright inferno? Have you had your shoe soles burned off by those dead looking white ashes? Have you seen men shouting wildly, though you could not hear their voices for the roar and hiss of leaping flames and the fierce wind they engendered? Have you ever looked down a line all hedged with living fire and wondered if you'd live to feel the cool wind blowing? Have you ever seen a rancher driven from his fired homestead, while years of labor on his fields were wiped out in an hour? Have you ever seen a country where the furred and feathered wild things have been burned up, every one? And have you seen that country when the fire fiend has finished—the blackened stumps of noble trees, the white ashes, burned bare rocks, no living thing—black, deathlike desolation brooding over all?

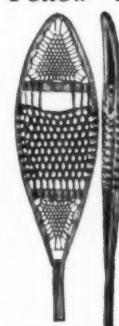
"If you have, you'll see that your match is out and look where you throw your cigarette."

campers and fishermen.

Mr. Osborne states that "the trails are dead-end roads running nowhere, from a communication point of view, and hence would fit into no conceivable state or county highway system." The whole history of wilderness invasion in the United States is replete with examples of "dead-end roads, running nowhere from a communication point of view," which nevertheless have later been expanded and connected into communication systems. As an example, the Ely-Buyck road, which cuts the wilderness of northern Minnesota in two, was started as a couple of far removed stub truck trails, to be used purely for fire protection. Gradually these stub truck trails were lengthened, and then all at once, before anybody seemed to realize it, there was a highway right through the heart of this wild country.

The wilderness, uninvaded by any signs of mechanization, has a value unique to outdoor recreation. It has a value which to countless individuals exceeds any other value there is. Except for northern Maine, the Adirondacks contain the last wilderness areas of any large size which remain in the East. Enjoyment of the wilderness depends not only on whether one actually is travelling at a given moment by primitive methods, but also on whether the whole environment is in rhythm with the primitive. An automobile road, even though it is disguised by the name of truck trail and travelled only by Conservation Department cars, wrecks the sense of wilderness completely. Therefore, Mr. Osborne's truck trails, regardless of whether or not he keeps them locked up, will destroy the character of the Adirondacks as "wild forest lands," a priceless character which the New York State Constitution for forty-one years has tried to preserve.

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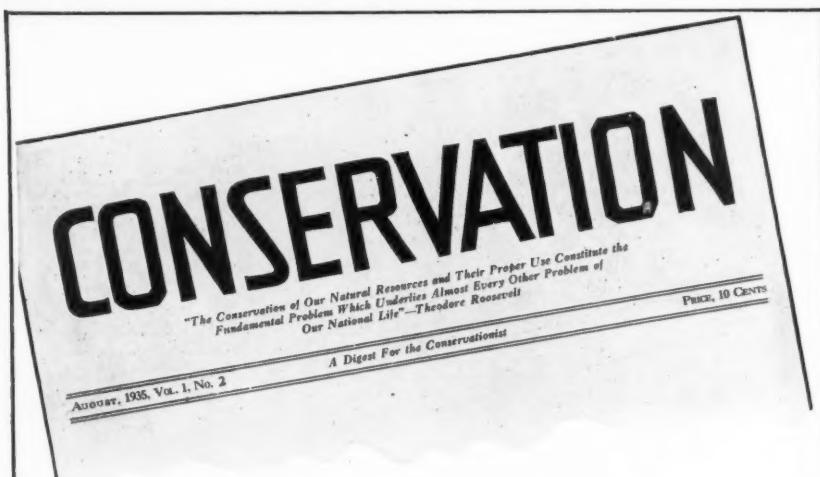
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AUTOBIOGRAPHY OF A PHEASANT

(Continued from page 32)

a nuthatch, however, gave me competition for these choice morsels. They had left their woodland haunts and come down into my marsh to obtain food.

Darkness came too soon, and I sought my roost of the night before. With the first gray streak of dawn, however, I was up hunting for food. It was colder, and snow had fallen throughout the night, covering the ground. In spite of this, I found some tall burdock plants whose prickly heads peeked out of their mantle of snow. The seeds were infested with the larvae of the moth, and from these I managed a meager meal. By scratching away the snow with my bill I obtained, under a covering of rotted vegetation, the larvae of March flies, little insects which are believed to feed upon the roots of growing grass.

In the late afternoon I left the marsh and flew against the wind and driving snow to an old kettle-hole that was covered with a dense growth of high bush blackberry plants, and under their tall, woody, prickly stems I hollowed out a snowy roost. Many times through the night I beat my wings to prevent the snow from completely covering me. I had little desire to become imprisoned beneath a blanket of snow and ice, as quail or Hungarian partridge sometimes do. Unable to liberate themselves they often starve or freeze to death.

Once during the night I was disturbed by the terrifying scream of the great horned owl. It drifted to me through the roaring wind from the woods in which he perched. This bird, with his long ear tufts, his fiercely-glaring eyes of black and yellow, and his powerful claws, was the most savage of all my enemies, but only at night had I cause to fear him and his silent, murderous ways. Tonight I was well concealed from his vision.

After a struggle the next morning I liberated myself from the pocket of snow in which I had roosted. It was still snowing and intensely cold. I was thankful for the extra layers of fat which I had acquired during the summer and which now served not only to insulate my body against the cold, thus lowering the loss of my body heat, but also served as a reserve from which I could obtain nourishment when food was scarce.

At first I tried to walk, but this was difficult. The snow was too soft and deep. I flew to a nearby fence post and surveyed my surroundings. On every side as far as I could see, the fields, the marsh, the lanes and trees were covered with snow. In the woods the limbs of leafless trees were naked and bare, but the scattered conifers were heavily bowed with snow. Along the fence lines and above the snow I could see the rotted tops of fence posts. Except for an occasional crab, wild cherry, or frost grape climbing upon an old dead oak, the rows had long since been cleared of vegetation by cutting and burning. I could see the staghorn sumac, the crimson haired fruit of which had furnished me many a meal in early autumn. Farther along grew a pokeweed from which I once had obtained the juicy, purplish berries that hung in clusters from its leafy branches. These shrubs were growing along the road now buried in snow that led to the woods. For the first time in my life I was faced with starvation.

The cold wind was penetrating my heavy winter plumage, so I flew into the woods and selected the best protection from the storm that I could find, which was beside a stack

of corded wood. With great difficulty I walloped out a pocket just large enough to hold my body. Hungry and exhausted I soon fell asleep.

The snow continued to fall and when I awakened hours later everything about me was black. It must still be night. Again I slept and, awakening the second time, tried to push myself clear of my roost. This effort only brought a shower of snow that fell upon me and cramped my body. I tried again and again to claw my way up and out, but failed. There was snow everywhere, and it seemed to close in upon me and hold me fast with its increasing weight. My stomach quivered, and the darkness kept going round and round, like the windmill near the farmer's house. The farmer—I had forgotten him until now. Was I to be the first cock pheasant to starve, or to freeze to death because I was imprisoned beneath a pile of snow? I closed my eyes and drifted into a sleep that sometimes lasts forever.

My next recollection was blinking my eyes at the white light of day, and warmth that made my frozen body glow with life. Where was I, and why? What had happened? The farmer told this story so many times that I remembered it word for word.

It seemed that the great blizzard continued for three days, during which time I was imprisoned in snow that had drifted as much as six feet deep along the side of the stacked wood. On the third day, the farmer's wood supply was low and he, with a large bobsled and a pair of horses, came back into the oaks where his winter's wood was stacked. By chance, the pile of wood beside which I was buried was near the edge of the woods. To get to the wood, the farmer had to shovel away the snow, and with the last shovelful, he brought me to light, nearly frozen, starving, almost suffocated—but still alive. I was placed in the warm kitchen and was kept there for several days. Good soft corn mash was given me to eat. I soon regained my lost weight and, more slowly, my vitality.

During the remainder of that winter season I remained near the farm buildings, loafing around the yard during the daytime. When the sun shone I would select a bare spot on the south side of the barn, stretch my neck, fluff my feathers, and wait for spring. At night I roosted under the protecting toolhouse roof.

Sometimes I hear the farmer speak of planting trees, shrubs and vines, which he says will provide available and emergency winter foods for the game birds living on his farm. He also says that such plantings will provide the birds with additional and better protected roosting and nesting cover. He speaks of improving his oak woods, his roadside fence rows and orchards; he tells of corn and buckwheat which he intends to plant but leave unharvested, or plantings of grasses, hems and cowpeas. He calls this "wildlife management," but all he does is talk about it. He tells his friends that he would like to do these things if he could spare the money with which to buy the seeds and plants. Nevertheless, he saved my life on two different occasions. Perhaps next summer I will chase away the blackbirds and crows from his sprouting corn and will eat the insects that feed upon his seeded grains. I like to eat these sprouting grains myself, but will try to leave them alone.

After all, the fight we game birds make in order to live is far worse than humans realize. We struggle to break through the eggshell. We hatch, and unless we are strong, healthy and alert, we become the food of other birds and mammals or die of disease like almost everything else that lives. If we build our nests in open fields the crows

sometimes steal our eggs; if we build them in fence rows or thickets the owner burns us out. The mowing machine runs us down in hayfields; in the marsh the cattle, sheep or horses eat or tramp away our food and cover. In the summer we have plenty to eat. We get fat and lazy, so that by fall we are in excellent condition to be hunted by men and dogs. We fly here and there seeking a haven of rest, finding but few. In the winter we spend our days hunting for food and are lucky if we find it. We must endure the roaring wind, the driving rain, the stifling heat and piercing cold, and the ice and sleet and snow. Thus we live, on and on, always fighting and struggling to keep alive. But life is sweet—

As I bask in the sun, I seem to review my life—the tramping horses, the mower, my lifeless mother; the weasel, and the passing of Silky; the big, white cat, my fight with the rooster, the hawk, and finally the hours I spent in my snowy prison. Somehow, somehow, these incidents grow dim, for spring is coming and with it a new surge of life seems to hold me in its grasp. I am experiencing a sensation which I have never experienced before. It is not only the vision of the dreary days of winter changing to the brilliant ones of spring, but it is something internal within me that pulses, vibrates and grows. It is greater than anything else that ever happened to me. In some way it is linked with my sister, or with others like her. I look with more respect upon the common barnyard hens—but they are not for me. Perhaps I am looking for a beautiful brown-shouldered, wild bird of my own race. Maybe tomorrow I'll go down to the marsh and crow.

Taylor Grazing Act Contest

The constitutionality of the Taylor Grazing Act was challenged in a suit filed on December 9 in the Federal Court of Portland, Oregon, by Joe Abasolo, an eastern Oregon sheep man. Farrington R. Carpenter, Director of Grazing, who was named as defendant among thirty-eight persons, including Harold L. Ickes, Secretary of the Interior, stated that the suit is being brought by a group of nomad sheep men owning inadequate commensurate property who have been refused permits to continue grazing their flocks on the public domain.

Forest Taxation Report

At the time of going to press, "Forest Taxation in the United States," containing 681 pages of facts concerning existing methods of taxation and their relation to forestry, was issued by the Government Printing Office. This report is the result of nearly ten years of study by Fred Rogers Fairchild and his associates in the Forest Taxation Inquiry, set up under the Clarke-McNary Act of June 7, 1924.

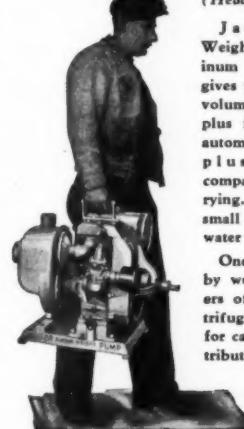
The existing tax system, as stated by Chief Forester F. A. Silcox in the foreword, "imposes more than a reasonable share on forestry and discourages the use of private land for this purpose." The same idea carried forward and the report concludes that "In some localities the operation of the tax system imposes an inequitable burden upon certain classes of forests or forest lands. And it has been demonstrated that the principal instrument of local taxation—the property tax—is not under existing conditions well adapted to the business of forest growing or the conservative management of mature timber . . . It follows that the taxation of forests is distinctly a matter of public interest."

A more comprehensive review of this report will appear in a later edition of AMERICAN FORESTS.



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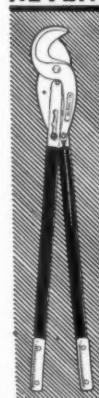
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SUMMER'S HAUNTS IN WINTER

(Continued from page 13)

edge not common to all campers. But the right way is to go by a dog-team, using a toboggan or sled as the canoe is used in summer, excepting that it can carry no passengers. It is reserved for carrying supplies, while you must follow along behind or break trail ahead, according to the condition of the snow. For trips of a few days, it is quite possible to carry all necessary equipment in packsacks, but for extended trips your party must employ a dog-team and a driver.

This is admittedly a nuisance, since dogteams are not ordinarily kept for the purpose of hire. The sport of camping out in winter has not yet reached the proportions which supports, profitably, the maintenance of many dog-teams. But this will all come. If current trends toward this delightful new kind of camping continue, there yet will be plenty of dog-teams available.

A few years ago I was initiated into winter travel in the north woods. A party of about a dozen of us started out along the Minnesota-Canada boundary, in the wonderful wilderness lake region of the Superior National Forest. We had four dog-teams, driven by game wardens and trappers of the region. Of our group, every man had come directly from an office in the city. All of us had previously visited the forest, had traveled through it by canoe. A few of us had covered the identical territory through which we were about to travel—along the international boundary for three or four days, then southward and to the coast of Lake Superior.

I don't suppose there were ever colder, more generally miserable men than we were when the teams and bobsleds that had hauled us in turned and went back to town. We stood around shivering, each secretly wishing he had had sense enough to stay at home, each, within the private precincts of the mind, looking with anything but delight toward the trip ahead.

After some hesitation we got under way, the four dog-teams first, up a long, narrow lake. We wore either snowshoes or skis, according to our individual tastes; each carried a pack-sack on his back containing his own changes of clothing and his own blanket.

If I were to say that the first day was good sport I would be guilty of succumbing to that peculiar charm that time and distance throw over even the most unhappy hours. The cold chilled us, the cords of our snowshoes found tender spots on our feet, and muscles began to give us trouble. We moved on, heads down, each, I am sure, doubting his ability to go through with the ordeal, yet each one determined not to give it up.

But what a difference the second day! What a crowd of mighty woodsmen surrounded the great fire at the first crack of dawn with steaming plates of oatmeal and immense cups of tea! It was cold, very cold, but once on the trail it concerned us but little. By high noon it was a glorious world—and a glorious world it remained, in spite of blizzards and biting winds from the north, for the days that followed.

Sleeping on the snow and ice! That sounds very cold. It gives me the shivers as I write it down, here in my warm apartment in the city. Yet how comfortable it was, after all! Snow, the emblem of cold, is not in itself cold. It ordinarily has the same temperature as the air by which it is surrounded, and it is a thing that all winter travelers, human or animal, love. It is a protection. The dogs curl up in it, dig-

ging deep into it, and when new snow falls upon them during the night they are careful not to disturb this free and effective blanket.

The snow usually is dry, not unlike white sand after you become accustomed to it. And you find yourself thinking of it, not as something cold, but actually as a kind of convenient, harmless—well, let us say white sand. When you stop at noon or at any other time during the day for a rest in the sun, you look around for a ledge or drift of snow, or scoop out such a ledge across the face of a drift with your snowshoes, and rest in its protection and warmth.

Snow is inconvenient only during thawing weather, when it is wet. It sticks to your skis, clings to the meshes of your snowshoes until they become heavy as lead, and threatens your general comfort. It does not wet your feet, for you carry with you a pair of rubber pads for use in case of a thaw. However, during the latter part of February—the best time for winter travel—thaws in the north woods usually are confined to those spots in the direct rays of the sun, and can be avoided by leaving the lakes and traveling in the protection of the forest, or—more usually done—by traveling from before dawn until noon, and making camp before the snow becomes sticky in the sun.

These early hikes are one of winter's supreme delights. First the saw-tooth silhouette of the spruce trees against the dawn, then the blooming of the daylight in a green-and-white world, then the sun's opening performance which culminates when the long, peaked shadows shoot spear-like out across the snow.

On through the morning, along the beds of little streams in the inner reaches of the forest, never approachable in summer, across large lakes, through narrow channels, through the forest itself from one lake or stream to another, penetrating to its depths without limitation of route, while on all sides magnificent vistas open up before you.

One by one, or two by two, we travel, for every man has his own natural stride, and there is no effort to keep together. You may lag behind, so far that the sound of the dogs is swallowed up in the forest, or you may keep at the head of the procession.

The sun will keep you warm, during the mid-day journey. It not only shines down from above, but it is reflected from the snow on all sides, and by the end of the week you are as thoroughly sunburned and tanned as you would have been had you chosen Florida sands for your vacation.

Then, soon after noon, comes time to camp. The tent is pitched, the beds made, holes chopped through the ice for fishing, and you spend the balance of the afternoon as you wish. Then the big camp fire, food, early to bed, ready for that awful call in the night which will prompt you to creep even further back beneath your robe, even as you realize you must be up and away.

Of course it isn't all sunsets and flowers, this winter camping. Blizzards come, as well as calm, sunny days; and blizzards cause trouble. There is faint sport in bucking a fine northern blizzard; nor is it this the worst feature. Blizzards bring fresh, soft snow, and if you're following a trapper's trail with your dogs, the new drifts on the open places mean slow progress, and the new snow that sifts into the forest and lies like an eider-down blanket there makes necessary the most arduous trail-breaking ahead of the dogs. Yet storms in summer are no fun, either.

TREES OF OLD MEXICO

(Continued from page 21)

also pineapples, bananas, custard apples, and differing species of Sapotes, the "Teak" of Mexico. So hard and durable is Sapote wood that pre-historically carved beams and slabs of it are found, intact, in perfect preservation, in long-abandoned ruins of Chiapas, wherein mighty columns of "enduring stone" have crumbled and fallen, long centuries ago.

In Tabasco, Cozumel and other seacoast places, this same tree is known as chicle, which yields the chewing-gum of America, and quantities of chicle-gum are shipped north to our own United States. There are scores of native and foreign concerns who amass fortunes from the chewable chicle, just as we number many "chewing-gum kings" among our American millionaires.

Everywhere along Mexican seacoasts majestic palms rear their stately heads; they bear varying fruits, fine dates and nuts, while the palm-oil of commerce is got from seeds of one special palm, the "Coyol." Bananas and plantains thrive throughout the hot coast lands, towering high above surrounding coffee, limes, oranges, lemons and other lesser fruits.

Highly useful to man in that it furnishes not only delicious fruit, but material as well for paper, thatch and cordage, the banana was first brought to Mexico from the Canaries, in the year 1516. Little labor is required in growing bananas other than gathering the huge bunches of fruit, which often weigh eighty pounds each, and yield forty-four times as much food to the acre as the potato, and one hundred and thirty times as much as wheat.

In short, it would be difficult to name a tree which, insignificant elsewhere, does not attain astonishing height and girth in Chiapas' rich and fertile territory, where even the humble coffee-bush of farther north is no longer a bush, but a tree thirty feet high or more. Groves of giant "Cedros" (Spanish cedars) abound, cutting up into lengths of sixty feet or more, and here enormous mahogany trees decay and fall, for lack of labor to fell and prepare them for market, as well as railroads to handle the lumber.

In Mexico, there are still occasional olive trees, planted four centuries ago by the early Friars who first introduced grapes, olives and wheat into the strange new Western world. The oldest and largest olive trees on this continent grow in the half-ruined churchyard of a remote Indian village in Morelia, noted as owning (and holding!) one of the world's finest "Titans," which no money can purchase from the superstitious, savage Indians who guard it at point of their unerring bows. Gnarled and decaying, for all their size and grandeur, these old olives are said by travelers, who have seen both, to be as large as those of the Garden of Gethsemane. In some of the small trees century-old church bells are swung for safety, towers and belfreys being earthquake-scarred.

Oranges, which now grow profusely in Mexico, are not indigenous, and that doughty Conquistador, Bernal Diaz del Castillo, admitted to secretly planting the first seeds, in 1519. A few oranges were brought from Cuba in the historic ships later burned by Cortes.

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R. B. GOODMAN—Wisconsin

Goodman Lumber Company

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MRS. ROY A. MAYSE—Indiana

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American Association for the Advancement of Science

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Crossett Watzek Gates Lumber Company

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Former Chairman of Conservation, General Federation of Women's Clubs

MRS. ROBERT C. WRIGHT—Pennsylvania

Chairman, Conservation Committee, Garden Club of America

Board of Directors

W. B. GREELEY, 1936—New York

Camp Fire Club of America

A. S. HOUGHTON, 1939—New York

New York State Reforestation Commission

THOMAS P. LITTLEPAGE, 1938—District of Columbia

Past President, District of Columbia Chamber of Commerce

WILLIAM S. B. McCALEB, 1936—Pennsylvania

Pennsylvania Railroad

JAMES G. K. MCCLURE, JR., 1937—North Carolina

President, Farmers Federation

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President, Carnegie Institution of Washington

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American Paper and Pulp Association

WILLOUGHBY G. WALLING, 1938—Illinois

WILLIAM P. WHARTON, 1937—Massachusetts

National Association of Audubon Societies

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Prizes for Christmas Tree Pictures

Mrs. Alma Margaret Higgins, of Butte, Montana, chairman of the Division of Art in Home and Garden of the Montana Federation of Women's Clubs, is offering cash prizes for pictures of living Christmas trees.

The conditions are that pictures must be of a lighted living tree; that a full description of its location and dimensions shall accompany each photograph.

Prizes of \$5 each will be awarded for the following:—Large community Christmas tree; Christmas tree in school yard, church yard or other public grounds planted by either Boy Scouts, Girl Scouts or Camp Fire Girls; Christmas tree in home grounds and indoor living Christmas tree. Entries should be sent to Mrs. Higgins, Butte, Montana, before February 1.

Lumbermen Back Canadian Treaty

The National Lumber Manufacturers Association, one of the foremost critics of the reciprocal trade agreement with Canada, on December 16 declared its intention to cooperate with the Federal Government.

In a letter to Secretary of State Cordell Hull, Wilson Compton, secretary-manager of the association, stated the association recognized that the fundamental objective of the government is a general restoration of international commerce, that it respected the agreement as constituting the deliberate conclusions of the President. The association intended to accept the "additional difficult responsibility," he said, in a spirit of cooperation, but hoped that the government as far as possible would aid the industry's effort "to meet this further difficulty now added to its already difficult situation."

Mr. Compton's letter read as follows: "On March 18 before the Committee for Reciprocity Information holding hearings with respect to the negotiation of a trade agreement with Canada then pending, we made this statement: 'The American lumber industry approves and accepts as desirable the principle and the practice of mutually advantageous reciprocal trade and tariff agreements between the United States and other nations.'

"Accordingly, we subsequently submitted to the appropriate agencies of the government a comprehensive statement of facts and suggestions. We recommended extensive reductions in tariffs on Canadian lumber of species relatively scarce in the United States and the maintenance of tariffs on species available here in great present and prospective surpluses. We have frankly and publicly criticized the provision of the recent agreement reducing by one-half the tariffs on imported lumber of species already available at home in continuous and unwieldy surpluses.

"It is important that the opportunity, under the initiative of the government, to secure a general restoration of international commerce be not needlessly impeded or impaired. Opinions may differ as to the wisdom or reasonableness of particular conclusions. They may not differ as to the soundness of the fundamental objective.

"The lumber industry has frankly criticized the agreement with Canada. May it, with equal frankness, state that it recognizes and respects the agreement as constituting the deliberate conclusion of the President; that it intends to accept the additional difficult responsibility thus imposed in the same spirit in which it has heretofore sought to cooperate with the constructive purposes of government. It expresses the hope that the government will in so far and in such ways as it can aid the industry's effort to meet this further difficulty now added to its already difficult situation."

WHO'S WHO**Among the Authors in This Issue**

LITHGOW OSBORNE (*Truck Trails in the Adirondacks?*), formerly publisher and editor of the Auburn *Citizen-Advertiser*, was appointed Commissioner of Conservation in New York in 1933 to succeed Henry Morgenthau, Jr. Active in public affairs for many years, Mr. Osborne was appointed in 1913 as secretary to James W. Gerard, Ambassador to Germany, and remained with him in Berlin until the United States entered the World War. Subsequently, he held diplomatic posts in other European countries, retiring from the service in 1919 to take up his newspaper work. He inherited an active interest in conservation and public affairs from his father, Thomas Mott Osborne, who was Commissioner of Conservation in New York during 1911.

ROBERT MARSHALL (*Comments on the Commission's Truck Trail Policy*), as director of Forestry in the Indian Service, Washington, D. C., has charge of the administration and conservation of nine million acres of forest land on fifty Indian Reservations. A son of the late Louis Marshall, of New York, and a graduate of the New York State College of Forestry, Mr. Marshall has a real interest in the welfare of New York State. He is the author of the recreation sections of the United States Forest Service report, "A National Plan for American Forestry."

RAYMOND E. JANSEN (*Coal Forests of the Past*) is a member of the scientific staff of the new Museum of Science and Industry at Chicago, where he is a designer and builder of natural history exhibits.

WILLIAM H. LONG (*The Autobiography of a Ring-Necked Pheasant*) is engaged in wildlife research at the University of Michigan. He was one of the men who initiated the studies for the Williamson Game Project conducted by the University.

R. H. RUTLEDGE (*Beating Fire in the Rockies*) is Regional Forester, U. S. Forest Service, at Ogden, Utah. Before going to Ogden in 1920, he was located at Missoula, Montana, first in charge of Operations and Land and then as Regional Forester.

DONALD HOUGH (*Summer's Haunts in Winter*) has been a well known writer for outdoor magazines since 1915. Identified with the Forest Service at one time and also with the Isaac Walton League, he now makes his home in Chicago.

G. CUNNINGHAM TERRY (*Trees of Old Mexico*), a descendant of Jean Louie Gibert, leader and pastor of a colony of persecuted French-Huguenots who took refuge in America, inherited from her ancestor a love of travel and adventure. Mrs. Terry spent many years in Mexico studying the customs and traditions of the people, especially the Mexican Indians, and learned many of their dialects. Her tragic death occurred recently as the result of an automobile accident. She was a native of Aiken, South Carolina.

E. B. LOOSLEY (*Field and Forest for Boys and Girls—Bows from the Yew*) is a free lance writer who has spent many years in the forests of California and Oregon. He lives in Klamath Falls, Oregon.

ERLE KAUFFMAN (*Save the Elm!*) is assistant editor of AMERICAN FORESTS; G. H. COLLINGWOOD (*Forestry in Congress*) is forester for The American Forestry Association.

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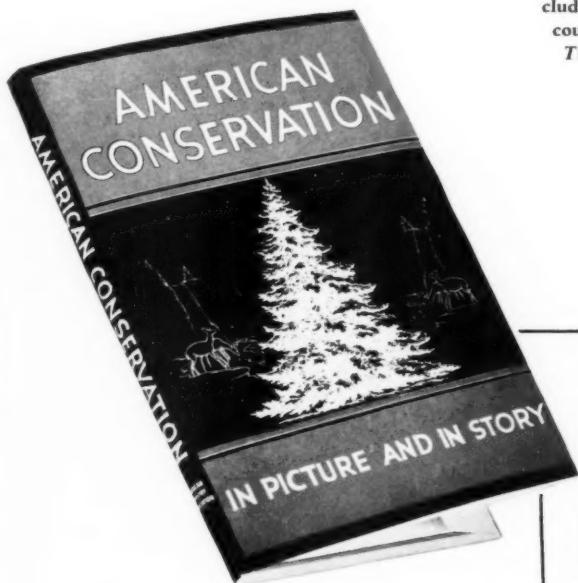
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"It should be read by all interested in keeping this country a place where men and their families can live comfortably and in happiness." —*The Spokane (Washington) Press*.



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